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NOTICES:—All communications relating to editorial matter should be addressed to the Editor, who will be pleased to consider articles or contributions dealing with modern chemical developments or suggestions bearing upon the advancement of the chemical industry in this country. Communications relating to advertisements or general matters should be addressed to the Manager.

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The Advance of Science

To the lay observer the recent meeting of the British Association for the Advancement of Science may have seemed deficient in thrills, but to the scientist it was probably the more important on that very account. The consideration of well-worn problems often leads to results of greater value than the trumpeting of results or theories which seem striking to the lay public and the lay Press. The meetings of the Chemistry Section were singularly free from "stunts" of any kind. Professor Thorpe's thoughtful address has already been dealt with in these columns. The degree of unanimity on the subject of tautomerism was surprising in view of the heated discussions which have occurred in the recent past on this and allied topics. The views expressed on the mechanism of homogeneous chemical reactions indicated that molecular collisions may here play a more important part than has, in the past few years, been thought to be the case. Professor ter Meulen's paper on organic analysis by hydrogenation shows how our ideas are being turned topsy-turvy. To the organic chemist the analysis of his substances by combustion in oxygen or air has been in the past a solemn—almost a holy—ritual. If the claims made for the advantages of the hydrogenation method are sustained by experience, then the nineteenth century organic chemist will have been attacked in what seemed his greatest stronghold.

Press accounts of the meeting grow in length and seriousness year by year. There is still, in some quarters, a tendency to regard the event as a form of comic opera, but the tendency is lessening. It is to be hoped that in future there will be a great extension of broadcasting at these meetings. There is no reason why this annual gathering of scientists should not become a national scientific week, in which, day by day, there would be broadcast talks on important scientific subjects by eminent men and women. When everything is said and done, such topics appear in the programmes far too rarely, and the scientific organisations of the country should make a definite effort to remedy this defect. This raises another very important point, namely, the possibility of broadcasting scientific discussions and lectures for the special benefit of scientific audiences. If they were given in the morning or afternoon, when the load on the ether is at a minimum, there would be practically no interference with the ordinary transmission of programmes, and the installation of loud speakers in the universities and technical schools would provide an appreciative audience of many thousands. The boon to scientific students and workers would be immense. Quite apart from the tonic value of actually listening to discussions in which the scientific views of the day were being critically examined by eminent authorities, it is possible that here lies the solution to the problem mentioned by Professor Thorpe, namely, the appalling growth of scientific libraries. This question deserves the consideration of all who believe in the advancement of science. It is unlikely that any scientific body could deal single-handed with it, but united action, especially if it were supported by some such institution as the Department of Scientific and Industrial Research, might render the course of action outlined above quite feasible.

Sulphuric Acid Facts

THE sulphuric acid industry has, in common with all other industries, passed through difficult times in the past few years, and it is by no means surprising that complaints as to the price of so indispensable a product should have been voiced by the large and diverse list of consumers whose existence depends upon it. It is, perhaps, frequently forgotten that the ultimate market price of sulphuric acid must be comparatively closely influenced by the proportion of plant capacity which it is possible to bring into use, for, as we have pointed out when discussing the matter in the past, when the demand falls measurably short of the potential supply, every manufacturer finds such things as standing charges showing a substantial increase per ton of acid produced. Prior to the war the plant capacity and the actual demand were such as to enable the plants then existing to be operated up to some 85 per cent. of their capacity, while during the war years the percentage was carried

up to something approaching 100. The awakening came, however, in the depressing period of 1921-22, when probably less than half of the total productive capacity sufficed to meet the demand.

In looking back at the proceedings of the recent Congress of Chemists in London one is tempted to suggest that the address delivered by Sir Max Muspratt on some problems with which the sulphuric acid industry is now faced was among the most valuable and practical of all the contributions submitted. Sir Max dealt with the plain facts in the lucid and straightforward manner which the ordinary manufacturing chemist readily appreciates and understands; and, after studying his remarks, even the hard-done-by acid consumer may be prepared to recognise that a case has been made out for the attitude of the acid manufacturer with regard to prices. If a study is made of the figures Sir Max quoted, it will be seen that the point to which we have alluded in connection with production-capacity ratio appears to bear a highly significant relation to the present situation. In other words, in 1915 (before the real war expansion took place) the capacity stood at only some 117,000 tons of acid above the production, whereas last year the excess capacity was in the neighbourhood of 550,000 tons. In conditions such as these, it can scarcely be said that manufacture can be conducted on a really economical basis, and the one point upon which further discussion would seem to be demanded is whether or not the greater use of sulphuric acid would be encouraged were the price to be lowered?

American Chemical Society's Jubilee

FOREIGN chemists, the vanguard of the largest contingent, it is said, that has ever visited America, are beginning to arrive in New York to join with chemists of that country in celebrating at Philadelphia during the week of September 6 the Jubilee of the American Chemical Society. Among those already in America is Sir James Colquhoun Irvine, Principal of St. Andrews University and head of its Department of Chemistry. Sir James is a summer session lecturer at Columbia University and will also speak on the rôle of chemistry in world affairs at the Institute of Politics, Williamstown, Mass. One member of the German delegation—Dr. Leonor Michaelis, professor of Biological Chemistry in the University of Berlin, is also in New York, as well as Professor Ernst Cohen, professor of Physical Chemistry in the University of Utrecht. Both Professor Michaelis and Professor Cohen are members of Columbia's summer session special lecture staff in chemistry. Every civilised land, according to one announcement, will send delegates to the Philadelphia session. Among the French representatives will be Dr. Camille Matignon, editor-in-chief of *Chimie et Industrie*, and the head of a research laboratory in the College de France, and Dr. Gabriel Bertrand, professor of Biological Chemistry at the Sorbonne, and chief of the service of biological chemistry of the Pasteur Institute. Denmark will send Professor J. N. Bronsted, professor of Physical Chemistry at the Royal Polytechnic Institute, Copenhagen, and Switzerland will be represented by Professor Peter Debye, professor of Theoretical Physics at Technische Hochschule,

Zurich, the author of numerous researches in physical chemistry and the leading exponent of the theory of the electrical structure of matter as applied to the problems of specific heats, dielectrics, and X-ray analysis. Foreign experts who will speak at the raw rubber symposium of the American Chemical Society at Philadelphia, September 7 to 10, are Dr. A. van Rossem, of Delft, Holland, and Dr. Henry P. Stevens, of London, consultant to the British Rubber Growers' Association. Canada will be represented at the symposium by Dr. G. S. Whitby of McGill University, Montreal. Professor Bronsted and Professor Debye will be heard by summer session students in chemistry at Columbia during August. Heading the delegation from Italy will be Prince P. Ginori Conti, who will address the American Chemical Society at Philadelphia on Monday evening, September 6, on "The Development of Chemical Industry in Italy."

Nearly 4,000 scientists are expected to attend the Philadelphia sessions, according to a statement by Dr. Charles L. Parsons, secretary of the American Chemical Society, and some hundreds of papers and addresses will be delivered. "At the end of the first half century of its existence," Dr. Parsons states, "the American Chemical Society is three times as large as any other organisation of chemists in the world, having now 14,900 members, including nearly all the prominent chemists in America, and many foreign chemists as well." The Society has elected to honorary membership fourteen prominent chemists representing the United States, England, Holland, Scotland, Italy, Switzerland, Japan, Czecho-Slovakia, and Belgium. They are:—Ira Remsen, President-emeritus and Professor-emeritus of Chemistry, Johns Hopkins University; Theodore W. Richards, professor of chemistry, Harvard University; Edgar Fahs Smith, Provost-emeritus of the University of Pennsylvania; W. Lash Miller, head of the chemical department, University of Toronto; Charles Moureu, of the College of France; Paul Sabatier, of the University of Toulouse, France; Bohuslav Brauner, of the University of Prague; Giuseppe Bruni, Professor of Chemistry at the University of Milan; Ernst Cohen, Professor of Chemistry at the University of Amsterdam; Frederick G. Donnan, Professor of General Chemistry at University College, London; Sir James Colquhoun Irvine, Principal and Vice-chancellor, University of St. Andrews, Scotland; Joji Sakurai, of the Imperial University of Japan; Frederick Swarts, Senior Professor of Chemistry of the University of Ghent, Belgium. The new honorary members will be present at the Philadelphia meeting. The foreign visitors have arranged to lecture before universities and scientific bodies in various cities of the United States.

Metallurgical Developments

SIR FREDERICK MILLS, the chairman and managing director of the Chemical and Metallurgical Corporation, gave an interesting account of the company's contemplated developments at the annual meeting in London this week. The company, he explained, is interested in the world rights in a process by which, it is thought, the metallurgical industry may be considerably expanded, so far as non-ferrous metals are

concerned. The progress at the Stratford works has been so encouraging as to justify the board in developing manufacture rather than in relying on the sale or licensing of patent rights. A large site on the Manchester Ship Canal has been obtained, and in six months time, it is hoped, the first portion of the plant will be in operation at Runcorn. The company's processes, it is stated, depend on the use, in the extraction of lead, of large quantities of salt, and the proximity of the new works to the great salt industry of Cheshire is considered an advantage. The chairman emphasised the chemical purity of the company's products, and expressed confidence in the Elmore processes, improved by the patented inventions of Mr. Stanley Smith, which, if the contemplated extensions are carried through, will shortly be given an opportunity of being worked on a commercial scale.

The First Chemical Engineering Exams.

THE first examiners for the Associate-Membership of the Institution of Chemical Engineers have courageously set up a delightful social custom. At the close of the recent *viva-voce* examinations they entertained the candidates to dinner, and probably by that very human means removed some of the murderous feeling which examiner's questions usually excite in examinees. Lest this should be taken as evidence that the way to the Associate-Membership is being made broad and easy, it may be well to state at once that the examination papers indicate, on the contrary, a very narrow and carefully guarded entrance. At the end of the tests imposed, a little refreshment would probably be welcome to the sitters.

The examination consisted of one home paper, for which a month was allowed, and four written papers, for each of which three hours was allowed, under ordinary conditions in London, followed by a *viva-voce* examination. The questions set seem to us to imply a distinctly stiff standard—a thoroughly sound policy in the case of a new Institution bent on building up a good reputation for its diploma. What particularly strikes one is the practical character of the tests. That is not to suggest that theory is at all neglected; on the contrary, it is implied if not stated, in nearly every case. The assumption seems to be that the candidate has his theory at his finger-tips, and has now to demonstrate his ability to apply it to the construction of plant in a reasonably wide variety of conditions. In short, no one without a very thorough knowledge of chemical theory and engineering practice would stand much chance of slipping through these tests. The *viva-voce* examination is a good safeguard from two points of view. The artful and well-crammed author of a "flash" paper may find himself confronted with questions that throw him back on his own initiative and resource, while the sound qualities of a candidate not at his best on paper may equally well be drawn out. It is notable that in several cases the candidate is brought up against the hard facts of industry. That is, he has to be familiar with current market prices, to be able to work out costs, and to subject his plant, materials, and productive processes to the most uncomfortable test of the company's balance sheet. The papers, as a whole, seem to be drawn up with a sound and comprehensive knowledge

of the tests a successful chemical engineer must be prepared for in practical works conditions, and to constitute a real test of theoretical and practical competence. It is the only way in which chemical engineering can be sure from the outset of a high place among the allied professions.

Research and Economy

ARISING out of the remarks of Dr. C. H. Lander, Director of the Fuel Research Station, at the recent discussion of the Fuel Section on "Solid Smokeless Fuels," are certain points of the financial aspect of research which deserve to be followed to their logical conclusion. It is clear that Dr. Lander is thinking on broad lines. In connection with the trying-out of low temperature carbonisation plant, he indicated that a clear idea of the economics of low temperature carbonisation could only be obtained by observations made on a very large plant over a period of, possibly, some years, a procedure which will certainly cost much money. In the present state of the coal situation it is difficult to see whether such an investigation, which may conceivably prove to be absolutely necessary, will be carried out by private enterprise, by the Government, or by both jointly.

A few weeks since, questions were asked in the House of Commons regarding the money already allocated to the Fuel Research Board, and one honourable gentleman seemed surprised and grieved that the Board had not already supplied us with a perfect smokeless fuel for domestic purposes. As this may be the portent of other expressions of dissatisfaction the following considerations deserve note. It is extremely unlikely that any results of great importance as regards fuel research will be obtained without considerable expenditure. Only a very small part of this expenditure can fall to the share of the investigators concerned. The major part must be spent on plant and research materials. The necessary investigations must be conceived and planned on big lines, and the investigators must be in a position to plan for years ahead if necessary. Even if the money spent in such a way resulted in a definite proof that this or that method were not feasible, then complaint would still, in our estimation, be unjustifiable, for an expenditure in this way of a few thousand pounds might result in a national saving of millions. But carping criticism is much more manifestly unfair when it is made in the middle of an investigation.

Books Received

- SYNTHETIC RUBBER. By S. P. Schotz. London: Ernest Benn, Ltd. Pp. 144. 21s.
 TEXTILE BLEACHING, DYEING, PRINTING AND FINISHING MACHINERY. By A. J. Hall, B.Sc., F.I.C. London: Ernest Benn, Ltd. Pp. 320. 50s.
 PHYSICAL AND CHEMICAL CONSTANTS AND SOME MATHEMATICAL FUNCTIONS. By G. W. C. Kaye and T. H. Laby. London: Longmans, Green and Co. Pp. 158. 14s.
 COLLOID AND CAPILLARY CHEMISTRY. By Herbert Freundlich. London: Methuen and Co., Ltd. Pp. 883. 50s.

The Calendar

Aug 31 to Sept 12	World Power Conference.	Basle, Switzerland.
Sept 1 to 4	Institute of Metals: Autumn meeting.	Liège, Belgium.

British Association at Oxford

Reports of Chemical Discussions

Some account is given below of matters of chemical interest which arose at the recent meeting of the British Association for the Advancement of Science.

Homogeneous Chemical Reactions

Collision Theory Still Tenable

On Friday, August 6, there was a joint discussion by Section A (Mathematical and Physical Science) and Section B (Chemistry) on the mechanism of homogeneous chemical reactions. Prof. J. F. Thorpe, F.R.S. (President of Section B), was in the chair.

Mr. C. N. HINSHELWOOD, in explaining the scope of the discussion, said it was exceedingly ambitious because the problem conveyed by the title included practically the whole question of why molecules underwent chemical change at all, but the field was, nevertheless, restricted somewhat by the fact that the discussion was upon homogeneous chemical reactions. That was done because here they had all the resources of the kinetic theory of gases at their disposal and, practically speaking, the discussion might be described as a discussion on the application of the kinetic theory of gases to the understanding of the mechanism of chemical change, which brought them to the very frontier of chemistry and physics.

The discussion was then opened by Professor JEAN PERRIN, of the Sorbonne, who spoke in French and discussed the question of the Arrhenius equation and the influence of temperature upon chemical reactions, giving a general conception of the activation of molecules and the idea of molecules needing excess of energy over the average energy in order to undergo chemical reaction. Professor Perrin also discussed in considerable detail the relationship between absorption and re-emission of radiation and the rate of chemical change.

Mr. HINSHELWOOD first emphasised the connection between the theoretical and experimental side of the subject. There was, he said, exceedingly little experimental material with regard to homogeneous changes in gases, to draw upon to which the kinetic theory could be applied and therefore theory and experiment had to go hand in hand and step by step. On the other hand, the absence of any very large number of reactions actually taking place between the molecules of a gas homogeneously, had led in certain quarters to assertions that such changes did not take place at all, and that all attempts to apply the kinetic theory were based upon a misunderstanding. He maintained, however, that there had been no demonstration of this. There were three kinds of known homogeneous reactions in gases: uni-molecular, bi-molecular and ter-molecular. The number of examples of each which was known was not very large; there were about half-a-dozen bi-molecular reactions, three or four uni-molecular reactions, and four ter-molecular reactions, and bi-molecular reactions on the whole had lent themselves in the simplest way to analysis.

Professor LINDEMANN said the main point he wished to raise was that taking the view that the molecule, after activation, did not break up immediately—that it has a sort of semi-stable life—and then either broke up or was de-activated by another collision, the question arose as to what caused it to break up. The objection that had been offered to the collision theory of uni-molecular reaction was that the rate of reaction was independent of the number of collisions. If the pressure and the number of collisions were halved, the reaction went on just as fast and therefore it was said that reaction did not depend upon collisions. If, however, it were assumed that the molecule only broke up when it was in the right state and that the average duration of its life before it broke up was similar to the duration of time between the collisions, this difficulty did not arise. In the case of a complicated molecule in an excited state, what was the condition which enabled it to dissociate? It might be that it was necessary to get a large amount of energy which was distributed in some particular way, or it might be necessary to have some phase relation between the oscillations of the atoms in the molecule. It might well be that we should be forced back to the assumption that the life of a complicated activated molecule was determined by phase relations in the physical sense, and not by the distribution of quanta upon the atom.

Professor Franck, of Göttingen, Dr. E. K. Rideal, and others also took part in the discussion.

The Structure of the Disaccharides

Professor W. N. HAWORTH, in a paper on "Modern Views on the Structure of the Disaccharides," said that a marked advance made in the constitutional study of sugars was the generalisation that the aldoses normally occur as amylene-oxide forms, that is, having a heterocyclic six-membered ring, and not, as was formerly thought, a five-membered ring (butylene-oxide); and further, that the γ -aldoses were butylene-oxide sugars (A Revision of the Structural Formula of Glucose: Charlton, Haworth and Peat, J. Chem. Soc., 1926, 89; cf. Hirst, *ibid.*, 352). Difficulty was experienced in including the ketoses in this classification owing to oxidation results obtained with fructose derivatives, which pointed to the converse rule. Recent experiments by Hirst and Haworth indicated, however, that the structure given to normal fructose by Irvine was invalid, as was also that applied to γ -fructose derivatives by Haworth. Both normal and γ -fructose were now included in the generalisation already applied to the aldoses. This fundamental advance involved a large readjustment of our ideas as to the formulae of disaccharides and polysaccharides. The possibility of the occurrence of γ - or butylene-oxide residues in the disaccharides was first suggested in the above paper by Charlton, Haworth and Peat. The structural formulae applied to lactose, cellobiose and maltose admitted of this formulation, as did also sucrose, raffinose, and inulin.

Examination of Tut-Ankh-Amen's Cosmetic

A short note by Mr. A. CHASTON CHAPMAN, F.R.S., and Dr. H. K. PLENDERLEITH pointed out that the tomb of King Tut-anh-Amen at Luxor was opened by Dr. Howard Carter in 1922 after having remained sealed for 3,300 years, and tests made with sterile swabs indicated the absence of bacteria within prior to opening. Among the many objects discovered was a sealed calcite cosmetic jar of peculiar design, which contained a yellowish-brown fatty substance having an odour at first suggestive of coconut. A unique opportunity was here afforded of studying the stability of a fatty substance which had been preserved in sterility over such a long period. Chemical examination of the material showed it to be almost entirely organic in nature, consisting of (1) a fatty portion representing nearly 90 per cent. of the whole; (2) a resinous portion; and (3) a small inorganic residue of calcium salts—the latter obviously derived from the action of fatty acids upon the jar. The fatty matters consisted partly of saturated acids of the ordinary fatty acid series, chiefly palmitic and stearic acids, and partly of the so-called "oxidised acids." Assuming that the latter had been formed by the oxidation of acids of the oleic acid type, the quantity found would point to the presence in the original fat of 25-30 per cent. of olein or other unsaturated glycerides. Glycerol, free and combined, still existed in the fatty portion to the extent of 5.46 per cent., which was equivalent to 4.8 per cent. of the cosmetic itself. The quantity of unsaponifiable matter was very small, and it was found impossible to detect the presence of cholesterol, phytosterol or other similar crystalline substance. The bulk of the evidence seemed to suggest that the cosmetic consisted originally of about 90 per cent. of a neutral animal fat, with about 10 per cent. of some resin or balsam.

Professor H. J. BACKER, of Groningen, Holland, read a paper on the "Separation and Racemisation of Simple Optically Active Compounds."

A Discussion on "Tautomerism" Unexpected General Agreement

On Monday, a discussion on "Tautomerism" took place in Section B (Chemistry), Prof. J. F. Thorpe, F.R.S., being in the chair.

Professor THORPE gave the definition of tautomerism as stated in an early edition of the Oxford Dictionary: "Tautomerism: this term is applied to the property exhibited by certain

organic compounds of behaving in different reactions as if they possessed two or more different constitutions—i.e., as if the atoms of the same compound or group were arranged in two or more different ways expressible by different formulae." In other words, tautomeric change was due to the movement of the hydrogen atom in the molecule, and that movement determined the number or variety of the types of reaction which occurred throughout organic chemistry and which apparently tended to show no obvious relationship. If, therefore, they could ascertain, as was hoped from this discussion, some mechanism of indicating how this movement took place, they would be in a fair way to correlate the whole series of different types of organic phenomena.

Professor C. K. INGOLD, F.R.S., reviewed the whole field of tautomeric change in a general manner, in order to give a reminder that there were several standpoints which could with real advantage receive attention. It used to be the custom to reserve certain synonymous expressions to distinguish tautomeric changes which proceeded too rapidly for measurement from those which did not, but that distinction was a purely arbitrary and artificial one. He would divide tautomeric phenomena into three classes. The first group was mobile cation tautomerism, of which a good example was transmigration of hydrogen atoms. The second group was mobile anion tautomerism, of which hydroxyl tautomerism was the best known. The third group he called co-valency tautomerism. The first group seemed definitely to require, for its realisation, the presence of an electron source. Professor Ingold then reviewed the present state of affairs, particularly as regards the first group he had mentioned, and made a brief reference to the other two classes, referring to certain results of his own which had recently been published.

Professor T. M. LOWRY, F.R.S., said he attached a great deal of importance to the definition which the president had read out because it had wiped out permanently the distinction between tautomerism and pseudomerism, and that was a good thing. The definition did, however, make a distinction between the chemical phenomena of tautomerism and the physico-chemical phenomena of dynamic equilibrium of isomerides, and the reason why a new definition was called for was that although Laar's theory might have been right it was wrong in the cases to which he applied it. As an organic chemist, Laar, true to his class, was more concerned with the results of the application of a theory than with the accuracy of its application as regards the cases to which it was applied. One advantage of the definition now stated was that there was no theory behind it; it merely recorded the fact that a substance behaved as if it had two structures, and the definition did not attempt to say whether two structures existed, or whether they were imaginary or real, or whether they were equal to one another or not. The absence of a theoretical basis for the definition was one of its actual merits. He mentioned the definition of tautomerism given in Schmidt's book on organic chemistry, 1926, which stated that "A substance is tautomeric when it forms two series of derivatives. These are derived from two parent substances which differ only in the position of the hydrogen atom and of one or more double bonds."

In 1913 Kurt Meyer gave this definition: "Substances are tautomeric if they form two series of derivatives which are deduced from two isomeric formulae. These formulae differ from one another in the position of the hydrogen atom and of one or more double bonds." The definition quoted by the president, however, was much more acceptable, because the other two definitions he had quoted ruled out the very best examples of tautomerism, and there was no better example than benzene, which Laar had suggested.

Professor R. ROBINSON, F.R.S., said he must refer to the extraordinary transformation which had apparently been accomplished in the region of theoretical chemistry since the meeting of the British Association in Southampton last year. There, during a discussion which involved polarity theories in organic chemistry, the atmosphere was by no means so unanimous as it had been that morning. That was a matter for congratulation because it meant that everybody interested was able to apply something like the same theoretical ideas to similar problems. At the same time, he wished to give a word of warning against what seemed to be an undue simplification, at any rate, in some of the terminology, especially as regards the suggestion that it was possible to classify any atom as an

electron source or otherwise. Such an attempt at simplification of nomenclature was rather confusing. Referring to the admirable work done by the president and his colleagues, Professor Robinson suggested that there was no real evidence in this work of the existence of intra-annular tautomerism. It seemed to him a question of a very stable molecule which broke down in accordance with the circumstances of the particular reaction.

The President said the discussion had indicated an almost embarrassing agreement on a subject which, this time last year, was one of the most controversial in organic chemistry. None of the speakers, however, had dealt with the mechanism by which these tautomeric changes took place. That was a very difficult problem, but it did seem rather striking that in all the cases which had been mentioned there was a system in which the hydrogen was intermediate or could be placed in an intermediate position between the two extreme atoms. It was very difficult to realise how the hydrogen got from one extreme member of the system to the other. Moreover, systems which did not have tautomeric hydrogen underwent very remarkable reactions in order to acquire it.

Protection of Aluminium and its Alloys

Before Section G (Engineering) on Monday, August 9, a paper was read by Dr. G. D. Bengough and Mr. H. Sutton on the protection of aluminium and its alloys against corrosion by anodic oxidation. The authors pointed out that the resistance of aluminium to corrosion was due to the presence of a protective film of aluminium oxide or hydroxide. The resistance of aluminium against corrosion might be greatly increased if a thick and strongly adherent film of oxide or hydroxide were formed on the metal, instead of the natural thin film. It had previously been suggested that such a film could be formed by making the metal the anode in a bath of sodium hydrogen phosphate, but the authors found that the film produced by anodic oxidation in a bath containing chromate, bichromate, or, best of all, chromic acid, protected the metal much more effectively against corrosion.

Organic Analysis by Hydrogenation

Before Section B (Chemistry) on Tuesday, August 10, Professor H. ter Meulen, of Delft University, described his work on the use of hydrogenation in organic analysis. The usual methods for the estimation of sulphur, halogens, nitrogen, arsenic, and mercury in organic compounds are based upon destructive oxidations, and Professor Meulen said he had worked out methods depending upon destructive hydrogenation which were at least as accurate as the oxygen methods, and much more rapid. They also permitted of the estimation of oxygen. Generally, the substance that was to be analysed was heated in a quartz tube through which a current of hydrogen passed, and in most cases catalysts were used to promote hydrogenation. As an instance of the work possible by these methods, it was pointed out that sulphur was converted into hydrogen sulphide, which was estimated by titration with iodine solutions or colorimetrically. Halogens present yielded halogen acids, which were titrated by Volhard's method, and nitrogen gave ammonia. Oxygen was converted to water, which was weighed after absorption. Arsenic and mercury were both set free and weighed in the metallic state. By the estimation of the oxygen it had been possible to make a complete analysis of the organic matter in a sample of coal as follows (per cent.): carbon, 79.9; hydrogen, 5.1; nitrogen, 1.8; oxygen, 4.4; sulphur, 1.15; ash, 7.36; total, 99.71. Professor Meulen demonstrated his method at a soiree at the University Museum.

Fine Grinding and Fine Powders

In a paper read before Section B (Chemistry) on Tuesday, August 10, Dr. Geoffrey Martin (late Director of Research to the British Portland Cement Research Association) gave details of the research work carried out by the Association upon the chemistry and physics of fine grinding and fine powders. Fine powders, said the author, behaved in many respects like fluids, and possessed many curious properties, especially when colloidal dimensions were approached. The powders examined were produced in an 18 in. by 18 in. experimental tube mill, using quartz sand and 1 in. steel balls. The powders were subsequently elutriated in a stream of air of definite and measured speed, and the weight, number, and

surface of the particles composing them were ascertained. The following laws were found to hold rigorously :—

Law 1.—The surface produced is accurately proportional to the work done.

Law 2.—The number of particles produced increases with decreasing diameter according to the compound interest law.

Law 3.—The average shape of the particles produced in crushing remains the same whether they are large or small. If S be the statistical surface of the particles of any diameter X which compose a homogeneous grade, then $S/X^2 = \text{constant}$ A ; or $S = AX^2$.

Law 4.—Crushed sand coming from a grinding mill is composed of homogeneous grades of crushed sand, in which the distribution of the numbers of the particles with their diameters cannot be altered, no matter how often we regrade the sand.

Already, said the author, practical results of this work of considerable financial consequences had been attained. The best kinds of grinding media, best speeds of grinding mills, best volumes of contents, and the influence of the air speed on grinding had all been accurately determined. From these results grinding machines of a greatly increased efficiency were being designed. One practical consequence of fine grinding, resulting in an annual profit to the cement companies of over £300,000 annually, was the production of rapid-hardening cement, produced by very finely grinding ordinary cement. The rate at which hardening took place depended upon the surface exposed by the powdered cement. The total cost of carrying out this research work was less than one-twentieth of a penny per ton of the cement produced in this country by the cement manufacturers—a striking illustration of the financial benefits which research work confers on industry.

A Helium-Mercury Compound

In Section B (Chemistry) on Tuesday, Mr. J. J. Manley described experiments which he said he had been carrying out during the past six or seven years dealing with the union of helium and mercury. The original experiment which demonstrated that helium could combine with mercury was a great surprise. The most recent experiments had confirmed the conclusion that the combination would occur, probably forming a helide to which he gave the probable molecular constitution of $HgHe$. Earlier experiments had led to the belief that the formula was $HgHe_{10}$, but it was difficult to accept this, and on this account more careful quantitative experiments had been carried out, with the result that the first-mentioned formula was adopted.

Professor E. C. C. BALY suggested that the difference in results which had led to the second formula being put forward by Mr. Manley was due to the absorption of the helium by platinum wire, which was used.

Award of Ramsay Memorial Fellowships

THE Ramsay Memorial Fellowship Trustees have made the following awards of new fellowships for the session 1926-27 :— A British fellowship of £300, tenable for two years, to Mr. R. F. Hunter, M.Sc., Ph.D., for work at the Imperial College, London; a Glasgow fellowship of £300, tenable for two years, to Mr. J. D. Fulton, M.A., B.Sc., for work at the University of Manchester; a Swedish fellowship of £307 7s. to Mr. Gunnar Hägg, for work at University College, London; and a Swiss fellowship of £300, tenable for one year, to Dr. Max Brunner, for work at the University of Cambridge. The trustees have renewed the following scholarships for the same session :— Mr. G. A. Elliott, B.Sc. (British fellowship), for work at University College, London; Mr. T. Corlett Mitchell, B.Sc. (Glasgow fellowship), for work at the University of Cambridge; Dr. D. McKay Morrison, M.Sc., Ph.D. (Canadian fellowship), for work at the University of Cambridge; Mr. W. G. Burgers (Netherlands fellowship), for work at the Royal Institution, London; Dr. Ekonomopoulos (Greek fellowship), for work at University College, London; Dr. P. Misciattelli (Italian fellowship), for work at the University of Oxford; and Mr. Erik Rudberg (Swedish fellowship), for work at King's College, London.

Indian Chemical Notes

(FROM OUR OWN CORRESPONDENT.)

THE Indian glass industry, comprising several factories in India, has submitted a representation to the Government of India asking for protection for the industry. It is stated that the glass works scattered throughout the country are at present experiencing great difficulties on account of the keen post-war foreign competition in the very line in which the Indian glass factories have so far been working, such as chimneys, globes, pressed ware, bottles, phials and bangles. Their concrete proposals are (1) that the present *ad valorem* import duty of 15 per cent. on soda ash, which is used in large quantities in the manufacture of glass, and which has to be imported, should be removed, or at least a rebate allowed in their case; (2) that there should be made a uniform increase of ten per cent. in the import duty on all kinds of glassware; and (3) that the Indian glass industry should receive a bounty of 15 per cent. for a period of 10 years.

Glass Imports

In this connection it is of interest to note the extent and nature of glass imports into India. The total trade amounted to Rs.260 lakhs in 1925-26, of which bangles were responsible for 101 lakhs, beads and false pearls for 36 lakhs, bottles and phials for 37 lakhs, funnels and globes 15 lakhs, sheet and plate 28 lakhs, and other glassware 28 lakhs. The trade principally belongs to Czechoslovakia and Japan, the value of their respective shares being 83 lakhs and 67 lakhs. The share of the United Kingdom is 26 lakhs, a decrease of 3 lakhs compared with the previous year, and of 5 lakhs compared with 1923-24.

The report of the Industries Department of the Bengal Presidency for the year 1925 shows that in the Calcutta Research Tannery very important and useful investigations were conducted, not only in the methods of producing the more important varieties of commercial leather from the available raw materials under the local climatic conditions, but also in some of the chemical problems connected with tanning processes. The cow hides in the different parts of the provinces were examined, and investigations were made in the manufacture of box hides. It has finally been decided by the Government to retain this tannery as a permanent institution.

Purchase of Cement

The Indian Chamber of Commerce, Bombay, has drawn the attention of the Government of India to the Government purchase of cement at £11,100, against £9,900 quoted by another British firm, whose tender was the lowest. The explanation of the High Commissioner was that the indenting officer had insisted on cement of the particular make. In this connection the Chamber urges that the Government should specify the standard to which cement used in all Government departments should conform and then issue instructions that indenting officers should buy their cement in India so long as cement conforming to such specifications was available at the right price. It is claimed that there is actually an excess of producing capacity in the country itself, and therefore it should not be left to the whim of any particular indenting officer to buy his own requirements of this article outside India.

Hard Labour for Laboratory Assistant

MR. H. I. CANCELLOR, at Marylebone, recently sentenced a laboratory assistant to 12 months' hard labour for robbing his employers and defrauding their customers. The accused, Alexander Pringle Scott, aged 34, described as an expert laboratory assistant, who, since 1920, had spent about two years in prison for fraud, had been given a chance by the Associated Analytical and Clinical Laboratories (Limited), of Harley Mews South, London, W. He worked so well that in a short time his salary was trebled. He then left saying that he had a Government appointment. It was subsequently discovered that he had embezzled various sums of money. Taking advantage of his acquaintance with various doctors whom he had met in the course of business, he represented to them that he had obtained a Government appointment at public health laboratories in Scotland, and imposed upon their good nature. He was arrested while endeavouring to obtain a bacteriological microscope, value £22, from Hawksley and Sons, of Wigmore Street, London, W., by means of a forged letter.

Chemical and Metallurgical Corporation

New Extensions at Runcorn

At the ordinary general meeting of the Chemical and Metallurgical Corporation, Ltd., held on Monday, the chairman, Sir Frederick Mills, raised some important points in the course of his statement.

They were interested in the world rights in a process which had for its object the expansion of the metallurgical industry, so far as it referred to non-ferrous metals, and for which he considered this country had a special future. The methods of production of non-ferrous metals might be broadly divided into two categories—the older methods, which involved primarily the smelting of the ore, and the more recent methods, which involved the treatment of the ore by hydro-metallurgy, in which the ore was subjected to the action of various reagents, which dissolved the whole or a part of the mineral. The progress of hydro-metallurgy had been slow but sure. After many years it had obtained a high degree of perfection in the case of copper and zinc, but up to the present all attempts to extract lead commercially on a large scale by similar methods had been failures. One important reason for the slow progress in the recovery of lead by hydro-metallurgical methods was that the processes usually involved the use of chemical reagents not easily obtained except in industrial countries. As was well known, it was almost impossible to-day for a factory to produce commercially and economically only one chemical product. In order to carry out any chemical process it was always necessary to produce many different products, since in making one chemical they almost invariably made another.

The Company's Processes

In the same way, in the course of extracting lead by their company's processes, several other commercial products were produced, if he might use the expression, en route. These products cost virtually little, if anything, to put on the market, since they were formed simultaneously in the processes. When operating in an industrial country these products might readily be sold, and serve to increase the company's profits and to reduce the cost of extracting lead. Previously, this company's processes aimed only at the treatment of complex ores, but by reason of the reduced costs, which were possible by the sale of by-products and by the ability to obtain cheap salt, the scope of the company's field of operations had been much increased, and it was now able to treat not only complex ores, but also many grades of straight lead ores in competition with the lead smelter. By the older methods of lead smelting the great bulk of any other valuable constituents of the ore passed into the slags together with some of the lead. By their company's process other valuable constituents of an ore could in most cases be profitably recovered.

The total import of lead and lead compounds into the United Kingdom had a value approaching £12,000,000 per annum, of which amount a large proportion represented wages which could be paid in this country, if instead of importing finished lead and lead products, they imported lead ores and concentrates, and recovered the lead in this country. The present production of lead from imported ores in this country was almost negligible; in point of fact, leady ores were actually being exported instead of being treated here. The reason for that largely lay in the fact that an average lead concentrate probably contained about half its weight of lead, the remainder being material which, although it might be of value, passed away with the slag. In many instances, a large proportion of the remaining 50 per cent. of material, however, would, by the company's processes, be turned into commercial products.

Increased Quantity of Products

The result was that for every 100 tons of material imported a lead smelter had not more than 50 tons of product to sell, whereas in their case for every 100 tons of material imported they would have probably nearly 100 tons to sell. This was rendered possible largely by the development of mechanical processes operated at the mines which enabled the material to be cleared from gangue, such as quartz, etc., which was, of course, of little value, leaving behind only mineral values such as iron, zinc, copper, and sulphur, in addition to lead, which would all be recovered by their company's processes in

a merchantable form and remain in this country; thus little, if any, freight, was paid on worthless material. He therefore welcomed the opportunity of becoming associated with the sister branch, which possessed so many features in common with ferrous metallurgy.

In accordance with their policy of expansion as a manufacturing concern, the most careful examination of various sites in different parts of the country had been made. This occupied a considerable time, and as an outcome of protracted negotiations they had decided that a particular site on the Manchester Ship Canal offered advantages unequalled not only in this country, but probably in any other, for the particular purposes they had in view, for not only had they been able to obtain a site on terms which were advantageous to the company, but one which had peculiar natural facilities, abutting on the deep-water canal itself, alongside which existed a standard-gauge railway, a 40 ft. roadway, ample water supply, and a large tract of land for the deposit of residuals. The company's processes depended upon the use, in the extraction of lead, of large quantities of salt, and, as everyone knew, Cheshire was probably the greatest brine and salt-producing area in the world.

A Successful Permutit Patent Action

By a unanimous decision the U.S.A. Circuit Court of Appeals, Sixth Circuit, has decided in favour of the basic patent owned by the Permutit Co. covering their process and apparatus for the softening of water by zeolites. The case came before the Court on appeal by the Permutit Co. from an adverse decision by a District Court. This is the fourth time this patent has been sustained—twice by U.S.A. District Courts and twice by U.S.A. Courts of Appeals. The last decision, it is expected, will finally establish the validity of the patent, as the U.S.A. Supreme Court has generally refused to review patent cases on which the judgments of two Circuit Courts of Appeal are in agreement. The suits brought by the Permutit Co. up to date have covered three different designs of apparatus and in each case the apparatus has been held to infringe their patent. It is understood that the company intend to proceed against other manufacturers of water softening apparatus which employs zeolites and possibly against users of apparatus which is claimed to infringe their patent. In announcing the decision in the most recent case, Judge Denison stated: "Rarely is there a case where a new art and industry are founded solely upon and grow entirely from a patent so clearly as in this case. It is not to be denied that the entire commercial activities of all makers in this country have grown out of the commercial exploitation here by the owners of the patent. It is clear that the patent should be treated with all permissible liberality, and that the courts will go as far as they rightly can in the way of overlooking technical defects and overruling defences which are not clearly fatal."

Fares to the B.I.F.

It was announced in London this week that the principal railway companies had agreed to issue to every exhibitor at the British Industries Fair next February a return ticket between his place of business and the Fair at the rate of a single fare and a third. Similar facilities will be available for buyers. Exhibits will be conveyed back from the Fair to their place of origin at half rates. Up to date, the number of firms which have applied for space in the London section alone is over 400 and the total area reserved in the same section is well over 100,000 square feet, including 10,000 square feet which has been taken by the Empire Marketing Board for a display of Empire foodstuffs.

Bag Printing for Chemical Firms

THOMAS C. KEAY, LTD., 15, Baltic Street, Dundee, write:—"Following the lead of other countries, and in particular the United States, concerns packing their commodities in bags are now called upon to have such bags printed in an attractive manner, and this has necessitated the installation of improved printing machines. In this respect, our latest 'K' style rotary machine is now used, not only by practically all the bag makers in this and other countries, but also by large numbers of bag users in the chemical, flour milling, and other industries."

British Association of Chemists

The Congress

As was anticipated, the Congress of Chemists organised by the Society of Chemical Industry was a great success, and will have far-reaching results in the direction of increased solidarity in the profession. The whole congress had a most admirable press.

As a result of a salutary twist of evolution, the chemist is coming out of his shell. This is the result of a realisation which is coming to be shared alike by the public and by the chemist himself that his activities are no less vital to the welfare of the community than those of other senior professions. Up to now, however, the chemist has neglected an important element in his affairs for which other professions have allowed for many years. Professional efficiency has always been recognised as essential, but the social, that is to say the administrative, factor has been to a large extent left out of account. The organisation of the Congress has been the first big step to remedy this state of affairs, and there are very few bold enough to deny that it has been a very big step indeed.

It was not so long ago that a chemist in a letter to the chemical press advocated the formation of a society that should bend all its activities in the direction of introducing legislation to restrain chemists from reading papers to one another. Beneath the light cloak of this pardonable exaggeration, this member of the profession desired, as it would seem, to emphasise the need for social activity, almost completely crushed under the dead weight of technical jargon. None who listened to the papers presented during the Congress week would desire to see formed a society armed with such powers; and those who attended the social functions also will have realised that an admirable and well balanced mixture of the technical and the social was served up for consumption.

The Example of America

In America the unity of the chemical profession has been accomplished through social no less than technical effort. It is said that almost every chemist in America has a bowing acquaintance with every other chemist. The unity is a natural unity, not primarily a deliberate combination to attain some professional end, and the solidarity thus obtained has been such that the voice of the profession is distinct and effective at Washington.

The success of the Congress is evidence of the fact that the profession in this country has set its foot upon the same road. That road is perhaps not easy, but there is upon it no obstacle which courage and patience cannot remove. Unity and solidarity within the profession are no less important than technical efficiency; technical efficiency alone cannot bring about that solidarity. Other qualities are necessary to accomplish this, and to these the social activities of the Congress have given opportunity and scope.

And as a result of this event there has been borne in upon the chemist in a new and forceful way the interdependence of the multiple branches of chemical science. As example may be cited—the case of a well qualified chemist in fuel technology who had not realised how important was the fuel problem to the brewing industry, and who further expressed surprise that the industry could have a metallurgical problem at all. In an age of specialisation, there is a danger of imprisonment in a water tight compartment. Socialisation is essential; watertight compartments are dangerous.

The results of the Congress have been well received in general, and that they have been singularly happy cannot for a moment be doubted. It is to be hoped that this will be a prelude to further meetings even more fruitful and stimulating.

Reopening of Works

DORMAN LONG AND Co. are believed to be shortly reopening the rolling mills at their Warrenby ironworks, which have been closed since the coal stoppage affected supplies of material. This is said to be in order to cope with a demand which has arisen in connection with the firm's Sydney Bridge contract and other constructional work, and will keep the mills going for at least a fortnight. One of the large rolling mills at Earl Dudley's Round Oak works, South Staffordshire, is also restarting, finding work for 200 men, and will probably be kept going for six weeks.

Industrial Dust Respirators

Tests at the U.S. Bureau of Mines

A STUDY of various types of respirators designed as safeguards against the presence of injurious dusts encountered in mining and many other industries has been conducted by chemists of the Pittsburgh experimental station of the United States Bureau of Mines. Many industrial dust respirators, and many fabrics and filtering materials, including cheese cloth, cotton flannel, bleached and unbleached muslin, filter paper, and absorbent cotton, were tested. The filtering efficiencies of the respirators were determined by passing air containing either tobacco smoke or suspended silica dust in minute particles through the respirator at varying rates. A small stream of the air that escaped from the respirator was viewed in a beam of light in a dark box. An equal stream of the unfiltered air was viewed alongside the first stream, and the unfiltered stream was diluted with measured portions of pure air until the two streams reflected light of equal intensity.

Efficiency of Respirators

The efficiencies of the industrial dust respirators in restraining tobacco smoke were found to range from 5 to 33 per cent. when the air was passed at a rate of 32 litres per minute. A gas-mask canister with two filters of absorbent cotton showed 63 per cent. efficiency. A flat felt filter was most efficient, with 97 per cent. The efficiencies against silica dust floated in air ranged from about 9 to 70 per cent. for the dust respirators. The silica particles were mostly one micron in diameter or four times the diameter of the tobacco-smoke particles. As the dusts most injurious to miners, stoneworkers, and many others engaged in dusty trades are about one micron in diameter, the respirators, if worn, can prevent inhalation of a considerable amount of dust, but not all.

While the laboratory study has shown that most dust respirators are not highly efficient in removing tobacco smoke from air, it has been found that a filter which removes 50 per cent. of tobacco smoke from air flowing at the rate of 85 litres per minute is very efficient in restraining ordinary industrial dusts, and also smokes from burning wood or carbonaceous material, such as those encountered by city firemen. Hence 50 per cent. efficiency against the tobacco smoke by the laboratory tests has been adopted by the Bureau of Mines as a standard requirement, together with others, for approval of respirators or gas masks for protection from smoke or dust.

As the laboratory tests performed on the dust respirators were severe, the low efficiencies found do not indicate the general efficiencies under all industrial conditions of these respirators. Many of the industrial dusts are less difficult to restrain, and the overall efficiency of the respirators in actual service is correspondingly higher.

Comfort in Use of Respirators

The discomfort caused by respirators covering the face, the heat engendered thereby, irritation of the skin at contact with the respirators, poor fit which allows leakage in some instances, or leakage at valves, and resistance to flow of the air breathed, are the most serious disadvantages of respirators. The resistances of industrial dust respirators were found to be 0.25 in. to 1.5 in. of water to air flowing at 85 litres per minute. The flat felt filter had a resistance of 2.25 in. and the gas-mask canister 3.6 in. A man wearing a gas mask can work hard for only about half an hour, when, on account of the extra exertion caused by the resistance to breathing, he must stop to rest or greatly reduce his exertion. The resistance of the dust respirators, although causing some discomfort, does not seriously interfere with the man's exertions until the filter becomes clogged with deposited dust, the resistance then becoming correspondingly increased. The filter must then be cleaned or freed from dust, or replaced by a fresh one.

While the use of respirators should be encouraged among workers in dusty industries, the Bureau of Mines' tests show that respirators cannot be considered a final safeguard. Efforts should be continued in mines and other industries to prevent the formation of dust and its distribution into the air, in mines particularly, by the use of hollow drill steel and water and by sprays on the undercutting machines. Further details regarding these tests are contained in Serial 2745, "Tests and Characteristics of Dust Respirators," by S. H. Katz, G. W. Smith and E. G. Meiter, copies of which may be obtained from the Bureau of Mines, Department of Commerce, Washington, D.C.

Benn Brothers' Annual Meeting

Industry and the General Strike

SIR ERNEST BENN, presiding at the annual general meeting of Benn Brothers, Ltd., on Friday, August 6, said it was a pleasure to welcome the shareholders for the first time in Bouverie House, the new home of the company. Since the accounts were published they had heard with great regret of the death of Mr. James Stewart, a former director, who joined them in 1916, when the last amalgamation was brought about. The past year had been an anxious period, because it had seen the biggest development in the history of the company. They had come through the great scheme of housing the trade press in adequate and proper premises, and they were feeling very happy about it. They had had anxieties in the matter of the general strike, and were still feeling the effects of the prolonged coal stoppage. But for the general strike, this year would have surpassed any year in their history in profits. In the Board's view, however, the general strike was going to help them. They were in an industry in which they had to deal with perfectly organised labour. They had in the publishing business 31 trade unions which for years past had been putting demands forward, some of them quite proper and others improper. They had always had this big stick with which to beat the publishing firms—if their demands were not acceded to, the papers would not come out. The general strike had cleared that difficulty away. Publishers now knew they could cease for a week or two and still live—that their goodwill and copyright did not go.

There was, the Chairman continued, a great deal of discussion in the newspapers about the facts of industry and the necessity for telling everybody all there was to know about them. In his experience, the trouble was to get anybody to take the remotest interest in the facts of industry. It was difficult to get shareholders really to understand the figures put before them. They had always prided themselves on the building up of that great business and publishing to the world all the facts there were to know about it. He had himself gone further, and proclaimed to the world the intimacies of his domestic affairs in "The Confessions of a Capitalist." In regard to Bouverie House, he would like to recognise their indebtedness to the architect, Mr. Campbell Jones, and the clever contractors, Messrs. Huntington and Co., who were responsible for putting up that great ornament to Fleet Street and the City of London. The Board had in mind first the comfort of the staff. They were also anxious that Bouverie House should be used for the convenience of their customers. They wanted to see more use made of the Publications Hall and to get those with whom they were associated into the habit of using it. He was very pleased that the hope he expressed last year had really been fulfilled, and that they had now got the finest series of trade papers in the world, housed in the finest offices of their kind in the world.

The Chairman concluded by moving the adoption of the report and accounts, and that a dividend at the rate of 17½ per cent., including the interim dividend of 6½ per cent., less tax, be paid in respect of the year ended June 30, 1926.

Mr. H. P. Shapland seconded the motion, and the resolution was carried unanimously.

The meeting closed with a vote of thanks to the Chairman.

H. G. Wells's New Novel for Business Men

It is now an open secret that *The World of William Clissold*, a stupendous three-volume novel, by Mr. H. G. Wells, which will be published during the autumn, is of the most vital interest to every English industrialist, great and small, for its theme is nothing less than the salvation of the world by and through business men. After toying with Fabianism and Socialism of many brands, Mr. Wells, now at the very summit of his maturity, comes to the view that the buyers and sellers, the practical organisers, are an instrument of destiny that alone can save civilisation from ruin and catastrophe. Here at last, by the pen of one of the two or three really great thinkers of the twentieth century, the business man, who has allowed himself to rank below even second-rate professors, artists, poets, and politicians, is given his true place as the potential leader of the human race.

The publishers, Ernest Benn, Ltd., announce that volume I will be published on September 1, volume II on October 1,

and volume III on November 1. So enormous has been the advance demand, that the first large impression ordered of volume I was over-subscribed weeks ago—nearly two months before publication. In order to avoid delay and disappointment, intending readers should at once send a postcard to their bookseller or library, asking for a copy to be sent them on the day of publication, September 1. The price of each volume is 7s. 6d. net.

Barking Electricity Station

Important Extensions

ANOTHER sign of the increased attention now being given to national electricity is that the new Barking station on the Thames is to be doubled in size, plant for a further 100,000 k.w. being now on order. Full details are not yet available, but from the point of view of the combustion engineer it is particularly interesting that pulverised fuel firing has been decided upon in spite of the fact that the first section, only opened last year, has mechanical stokers of the travelling grate type. Also feed-water economisers are to be used in addition to exceptionally large air heaters, which, according to the latest ideas, is somewhat unusual with pulverised fuel. The contract for the steam generation, amounting to £750,000, equipment has been placed with International Combustion, Ltd., of London, and the installation will include 10 "Babcock and Wilcox" water tube boilers, 16,500 sq. ft. heating surface, each fitted with "Usco" multiple plate air heaters, 18,600 sq. ft. heating surface, "Lopulco" pulverised fuel, including "Raymond" pulverising mills of very large size, 15 tons of coal per hour, each with its own exhauster and cyclone separator; "Murray-Usco" water-cooled fin tube walls of 6,500 sq. ft. heating surface on the whole installation, feed-water economisers of 6,100 sq. ft. heating surface, and superheater of 6,500 sq. ft., while a complete equipment of accessories includes feed pumps, 20 induced draught and 10 forced draught electric-driven fans, and "Bailey" boiler house control instruments. Each of the combustion chambers will have a volume of 10,800 cub. ft., and is to be fitted not only with "Murray-Usco" tubes and "Lopulco" water screens, but also "Usco" suspended firebrick arches, and 11 pulverised fuel burners on the latest fishtail principles. The suspended arch is now making rapid progress, not only for mechanical stoking and pulverised fuel firing, but also in many different types of furnace in the metallurgical, glass, and ceramic industries, and the general principle of attaching firebrick blocks to overhead steel girders is capable of very wide application.

Record Salt Production in Canada

IN 1925, the production of salt in Canada exceeded all previous records, according to final statistics just issued by the Mining Branch of the Dominion Bureau of Statistics at Ottawa. Shipments during the year totalled 233,746 tons as compared with 207,979 tons produced in 1924. There was a considerable decline in value during the year, the average price for all grades being \$6.04 per ton, as against \$6.61 in 1924. The production in Ontario amounted to 226,315 tons or 97 per cent. of the total; Nova Scotia and Alberta contributed the remainder. The year's shipment of 833 tons from Alberta came from the Fort McMurray district, where development work in the salt industry has been carried on for a considerable time. Nova Scotia's production consisted of salt mined at Malagash.

Imports into Canada of salt, all grades, were equal to 83 per cent. of the total Canadian production. Customs' records show that 193,632 tons, worth \$1,077,321, were brought into Canada during 1925. Exports of Canadian salt totalled 2,324 tons, while in the preceding year only 965 tons were shipped from Canada. The twelve companies operating in Canada during 1925 reported a capital investment of \$2,563,508. Salaried employees numbering 57 and wage earners to a total of 345 were engaged in this industry during the year. The salaries and wages paid amounted to \$467,487. Fuel costs accounted for an outlay of \$296,229, while the electric power consumed added \$19,139 to the total operating expenditures. Bituminous coal was the largest item among the fuels consumed amounting to 57,081 tons at \$278,067. Steam engines employed numbered 30 with a rating of 717 horse power. The 50 electric motors in use during the year were rated at 710 horse power.

Chemical Matters in Parliament

Methylated Spirits

Mr. Morris (House of Commons, August 4) asked the Chancellor of the Exchequer the bulk quantities manufactured of methylated spirits, under the headings power, industrial and mineralised, during the year ended March 31, 1926.

Mr. Churchill, replying, said the bulk quantities of power, industrial and mineralised methylated spirits manufactured during the year ended March 31, 1926, were as follows:

	Bulk gallons.
Power	91,282
Industrial	4,247,347
Mineralised	1,446,358

Defensive Gas Instruction

Mr. Ammon (House of Commons, August 4) asked the Secretary of State for Air whether he was aware that prior to 1924 defensive gas instruction, including the use of box respirators, was stopped in the Air Force; whether such instruction was resumed, and whether it was given now.

Sir S. Hoare said the policy of the Air Ministry in regard to defensive gas instruction was similar to that of the Army as explained by the Secretary of State for War in his reply to the hon. member on July 26.

Mr. Roscoe Brunner on Coal Settlement

REPRESENTATIVES of all the big industries, including Mr. Roscoe Brunner (chemical manufacturers), Mr. D. R. Bremner (engineering trades), Mr. Arthur Dorman (iron and steel manufacturers), and Sir William Larke (Iron and Steel Federation), have presented their views to the Industrial Group of the House of Commons on the effect that a non-economic settlement of the coal dispute would have on the other great industries of the country.

Mr. Roscoe Brunner, presenting the chemical manufacturer's case, emphasised the interdependence of all industries, and pointed out that the settlements in the mining industry hitherto had been political in character, with consequent repeated disputes, and present proposals for settlement had all envisaged in some form an increase in the price of coal. That meant that either the consumer or the shareholder would have to pay the increase, which would go to the miner, who already earned more than the workers in the industries called upon to pay. He feared that any system of combined selling must inevitably raise prices; apart from that, his industry was dependent on many different varieties and qualities of coal, a fact which those in control of any centralised scheme seemed unable to appreciate. As an instance, he referred to the interference with their supplies by the Coal Controller after the war, which had resulted in heavy losses to the industry, due to unsatisfactory quality and increased haulage charges.

Future of French Potash Mines

ONE method of assisting French finances, which is known to be under consideration, is to let the potash mines of Alsace, now under State control, to private interests. Since the Armistice there has been a steady increase in the output of these mines. The output of potash salts from pure potash since 1919 from the sequestered mines under French control has increased from 580,000 tons in 1919 to 1,300,000 tons, and it is believed that this output may in time be trebled. There has been an agreement between the potash groups in France and Germany with regard to sales in the United States, and under this the German mines are to supply 62.5 per cent. and the Alsatian mines 37.5 per cent. of orders received from America. This percentage has recently been increased to apply to all foreign markets. It is believed that with propaganda in the agricultural parts of France the home market for potash could be very much increased, for whereas the consumption by agriculturists in Germany has been already brought nearly to its maximum point, France at present consumes less than half its due consumption. Accordingly, those who favour private enterprise as against State control believe that by letting her potash mines France might easily tap a new source of revenue and also assist her peasant population to get more out of the land by the use of potash.

German Beet Sugar Industry

THE commission, representative of the various organisations interested in the British sugar beet industry, which has been studying conditions in the German industry at the invitation of the well-known firm of Horning, of Rossleben, Saxony, has now returned to England. Mr. A. J. V. Underwood, M.Sc., who was a member of the commission, stated in an interview that everybody had been greatly impressed by the technical skill and attention to detail which characterised the organisation of the industry in Germany, both on the factory and on the agricultural side. Intensive cultivation and full utilisation of the by-products of the factory were essential to economic success and there was little doubt that similar conditions could, with increasing experience, be created in this country. An interesting fact was the success of the co-operative sugar factories, in which all the shares were held by farmers who were compelled to grow a definite acreage of beet every year. In these factories there was no difficulty in disposing of the by-products, which were readily taken up by the shareholders. The members of the commission were much struck by the cordial hospitality shown them and by the readiness with which all information and data were placed at their disposal.

Canadian Gypsum Production

ACCORDING to finally revised statistics, just issued by the Mining Branch of the Dominion Bureau of Statistics at Ottawa, gypsum production in Canada during 1925 totalled 740,323 tons, a new record for this important Canadian mining industry. The value received by the workers was \$2,389,891, or \$3.23 per ton. In 1924 the shipments amounted to 646,016 tons valued at \$2,208,108. Gypsum rock quarried in 1925 totalled 705,852 tons, of which quantity 162,820 tons or 23 per cent. was calcined.

Importations of gypsum into Canada were recorded at 8,921 tons with a valuation of \$136,308, while exports of Canadian gypsum amounted to 539,289 tons, consisting of 533,646 tons crude, and 5,643 tons ground, having a total value of \$948,710. Capital employed in the gypsum industry in 1925 was reported at \$4,506,995. Employment was furnished 51 salaried employees, 726 mine workers, and 262 mill workers, and their combined earnings were \$1,018,585. The cost of fuel used during the year was \$131,790, while the electric power consumed equalled a further outlay of \$57,859. Plant equipment included 78 electric motors with a combined rating of 2,892 horse power.

Ignition of Coal Dust

THE Mines Department, in a notice just issued, states that in examining the problem of coal dust explosions the most important factors, with respect both to the ignition of coal dust and the propagation of flame in a dust cloud, are the degree of fineness, the shape, and the distribution of the particles of dust in the cloud, and the particular physical quality involved is the specific surface of the dust. The merits of the several methods which can be used for determining the specific surfaces of dusts are discussed in a paper by Mr. E. F. Grieg, just published, entitled "Some Problems Connected with the Determination of the Fineness of Coal Dust." As the result of the discussion, it is concluded that sieving methods are not sufficiently accurate, that air elutriation methods provide means of obtaining grades of dusts of definite ranges of specific surface for the purpose of correlating specific surface and degree of inflammability of a dust cloud, and that by a combination of elutriation, sedimentation, and microscopic examination it is possible to grade the specific surfaces of dust.

Steam Traps

IT is stated by the makers, Ellis and Coe, of 308, King Street, Hammersmith, London, W.6, that the "Elco" steam trap is particularly efficient in the continual elimination of condensed water, and the prevention of escaping steam. The brass tap withstands pressure up to 60 lb. per sq. in., whilst the gunmetal variety withstands up to 100 lb. The trap is suitable for vacuum as well as pressure. The valve, of special material, is easily renewed, and it is stated that freezing up in cold weather is impossible.

From Week to Week

THE DEPARTMENT OF SCIENTIFIC AND INDUSTRIAL RESEARCH require junior assistants at the National Physical Laboratory.

LT-COLONEL SIR MATTHEW NATHAN has been appointed chairman of the Advisory Rubber Committee, in place of the late Lord Stevenson.

DR. ELLWOOD HENDRICK, of New York, who has been staying for some weeks in London, left on his return to the United States yesterday (Friday).

SIR ARTHUR BALFOUR, of Arthur Balfour and Co., Ltd., of Sheffield, has been awarded the Croix d'Officier de l'Ordre de la Couronne by the King of the Belgians.

THE BOUNTIES given by the German Steel Syndicate to exporting manufacturers on semi-finished materials purchased by them have been reduced by about 25 per cent.

"SIR HENRY BESSEMER, who made cheap steel possible," was the title of an address broadcast by Mr. E. V. Lane, from Sheffield, on Wednesday, on the seventieth anniversary of Sir Henry Bessemer's greatest invention.

GERMANY AND JAPAN are said to have arrived at an agreement regarding the terms of importation of German dyestuffs and other chemical products into Japan. This opens the door to the conclusion of a commercial treaty between the two countries.

THE MIDLAND IRON AND STEEL WAGES BOARD report shows that the outlay for May and June was just over one-fourth of the preceding four months and the lowest since the coal strike. There has been a drop in the selling price of iron, a ton, which means a reduction of 5 per cent. in the iron workers' wages.

THE U.S. BUREAU OF MINES has announced its approval of a new mask for protection against ammonia gas. It is said that all the Bureau's requirements were successfully met in its testing of the mask. It is described as the GMD ammonia gas mask, and is manufactured by the Mine Safety Appliance Co., of Pittsburgh, Pa., U.S.A.

THE USE OF DRUGS is said to be spreading, and £2,000,000 is believed to be spent on them every year. In a speech at Birmingham, Sir Walter Kinnear, the comptroller of the Insurance Department of the Ministry of Health, stated that the Ministry were satisfied that there was a considerable wastage of money on drugs, and unless there was some diminution in that expenditure he thought it would be necessary to make further arrangements which would check it.

FURTHER SALES OF NITRATE have been reported, says a Valparaíso message, by the Producers' Association during the past fortnight, an amount of 114,648 metric quintals having been disposed of for July shipment. Total sales of the fertiliser to date for delivery during the current nitrate year amount to 522,813 metric quintals, for which the various shipment dates in metric quintals are:—July, 1926, 499,800; August, 1926, 3,912; and September, 1926, 19,101, making a total of 528,813 metric quintals.

PROFESSOR H. B. DIXON, F.R.S., born on August 11, 1852, reached during this week his seventy-fourth birthday. Professor Dixon was for many years occupant of the chair of Chemistry in Manchester University, in succession to Sir Henry Roscoe. The Royal Society awarded him a Royal medal in 1913, for his eminence in physical chemistry, especially for work on explosions in gases. He has been president of the Chemical Society, 1909–11, and was president of the chemical section of the British Association at the meeting held at Oxford in 1894.

THE GAS LIGHT AND COKE CO., London, have placed an order with the Woodall-Duckham Vertical Retort and Oven Construction Co. (1920), Ltd., for four waste heat boilers to work in conjunction with horizontal retorts in two of the retort houses at the Beckton Gas Works. These waste heat boilers will have a total gross steam-raising capacity of over 52,000 lb. of steam per hour at 160 lb. per sq. in. and 200° F. added superheat. The installation is complete with all necessary equipment, including feed water heaters, feed water pumps, turbo-driven fans and superheaters.

RECENT WILLS include:—Mr. M. Harrison, aged 64, of Hull, deputy chairman of Hanger Watson and Harris, Ltd., paint and varnish manufacturers, of Hull, and a former president of the Paint, Colour and Varnish Manufacturers' Association, £4,842.—Mr. David Buchan Watson of Dundee, bleacher and yarn merchant of Watson and Shield, Dundee, £126,831 (provisionally valued).—Professor Alfred Mica Smith, of Ballarat, Australia, who died on May 14, left real estate valued at £1,045 and personal property valued at £5,309. By his will, made on April 27, testator, after making gifts to his stepdaughter, relatives, and friends, directed that £1,500 should be handed to the University of Manchester for the establishment of a scholarship in sanitary science, or for such other scientific purpose as the council of the university should determine, and that £300 should be held in trust, one-half of the income from it to be paid to the Present Students' Association, and the other half to the Past Students' Association of the Ballarat School of Mines.

A LARGE SUPPLY OF OXYGEN AND 200 LB. OF DYNAMITE are to be used in the salving of the sunken *Egypt*, lying about 10 miles off Brest.

MR. DAVID FLATHER, managing director of W. T. Flather, Ltd., steel manufacturers, has been elected Master Cutler of Sheffield for the ensuing year.

MADAME CURIE, the co-discoverer of radium, has arrived in Rio de Janeiro from France, accompanied by her daughter. Madame Curie will tour South America and will deliver a series of lectures.

A TUBE CONTAINING RADIUM to the value of 30,000 francs was accidentally swallowed by a patient in a Tarbes hospital, who subsequently died, and an examination of the body has failed to reveal the missing tube.

THE TREDEGAR AND NEWPORT WORKS of the Whitehead Iron and Steel Co., Ltd., are both working full time, despite the difficulty in obtaining fuel, and the combined output for both works in the past month has been a record for the firm.

THE CHILEAN FINANCE MINISTER recently stated in the Chamber of Deputies that the Government could not consider any reduction of nitrate export duties during the present nitrate year, but it would study methods of assisting the industry by other means.

ONE HUNDRED MEMBERS and their friends attended the United Alkali Co.'s head office sports held recently at the company's Widnes recreation ground. The Widnes officials and employees joined in the competitive events and helped to make the event a success.

THE OFFICIAL FIGURES for exports of Chilean nitrates are given by Mr. M. Harcourt Paine, the general manager of the Chilean Nitrate Committee, in order to correct misapprehension, as follows (in metric quintals): 1923, 22,645,145; 1924, 23,625,259; 1925, 25,170,488.

QUEENSLAND SALT, it is stated, will soon become available, a company at Bowen having carried its project almost to the production stage. Bowen is so situated, climatically, that the conditions for solar evaporation from sea water are exceptional. Recognition of this fact led to the formation of a company with a capital of £50,000, mostly locally subscribed, to undertake the production of salt.

AN INSTITUTION OF BRICKWORKS MANAGERS is to be organised by Mr. S. McPherson, general secretary of the Institution of Quarry Managers, 160, Edmund Street, Birmingham, at the request of a number of brickworks owners and managers. The Institution will serve "for the discussion of technical and geological questions relating to brickmaking and other matters pertaining to the control of the brickworks and the welfare of members."

A MEETING OF THE NEW TAMARUGAL NITRATE CO. has been called for August 27 at the company's Valparaíso office to sanction a provisional agreement made for the purchase of the business of the London Nitrate Co. The proposed fusion marks a further development in the policy adopted by a number of important Chilean nitrate producers in the interests of more economical working, the present crisis in the industry making retrenchment very necessary.

THE HONORARY DEGREE OF D.Sc. of Oxford University was on Monday conferred, in connection with the British Association meeting, on the following among others: Dr. Niels Bohr, Professor of Physics in the University of Copenhagen, famous for his work on atomic structure; Sir Daniel Hall, Chief Scientific Adviser to the Ministry of Agriculture; Mr. F. E. Smith, Director of Scientific Research at the Admiralty; Sir Josiah Stamp, the economist; and Professor W. Wien, Professor of Experimental Physics in the University of Munich, well-known for his work on the relation between temperature and radiation.

THE DEATH HAS OCCURRED of Walter Turvey, aged 59, an employee of the B.T.-H. Co., who died within an hour and a half of his admission to the Hospital of St. Cross, Rugby, through inhaling nitric or sulphuric acid fumes whilst at work. At the inquest held at Rugby on Monday a verdict of "Death from inhaling the fumes of some acid" was returned. It was stated that Turvey was an attendant at the works, and these being closed for the August holidays he had access to carboys of various acids, including nitric and sulphuric, and a fellow-attendant agreed that it was possible for him to have used either of these in mistake for spirits of salts, usually used for cleansing purposes. The condition of his health predisposed him to the effects of these acids.

Obituary

MR REGINALD SMITHSON, of Chesterfield, aged 50; for nine years assistant secretary of the Staveley Coal and Iron Co. (Ltd.).

DR. MAXIME MENARD, aged 53, as a result of X-ray work. The deceased conducted the radiology department at the Cochon Hospital, and although suffering continued his work to the last.

MR. ALBERT PAGENSTECHER, aged 87, at New York. The deceased introduced the making of newsprint paper from wood into the United States, and was a pioneer of the Canadian wood pulp industry.

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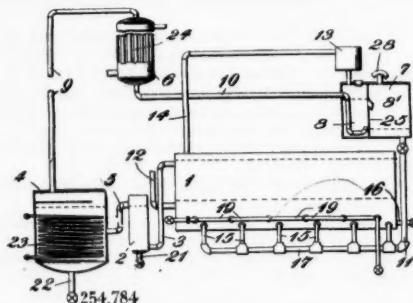
Abstracts of Complete Specifications

- 254,760. OXYGENATED ORGANIC COMPOUNDS, PRODUCTION OF. J. Y. Johnson, London. From the Badische Anilin und Soda Fabrik, Ludwigshafen-on-Rhine, Germany. Application date, February 2, 1925.

It is known that in the production of methanol and other oxygenated organic compounds from oxides of carbon and hydrogen at high pressures in the presence of contact masses the presence in the latter of iron, nickel, or cobalt ("iron metals") seriously prejudices the course of the reaction. It is now found that the iron metals lose their injurious effect and exert a high catalytic effect if they are present in the form of compounds or solid solutions which will not yield free iron metal by reduction or under the conditions of working. Thus the oxide of an iron-metal may be used in conjunction with an oxide of chromium, vanadium, tungsten, zirconium, aluminium, or titanium, with which it will form an irreducible complex or compound; or the iron-metal may be alloyed with manganese, chromium, tungsten, tin, zinc, etc., or combined with a metalloid such as silicon, boron, sulphur, phosphorus or arsenic. An addition of an alkali or an alkali metal compound is advantageous. The surfaces of the apparatus used should not contain free iron-metal, otherwise volatile carbonyls thereof may be produced. Part, or in some cases all, of the hydrogen of the gas mixture may be replaced by steam or hydrocarbons. A number of examples are given according to which mixtures containing principally methanol, together with small amounts of ethyl and higher alcohols, ketones, etc., are produced from mixtures of carbon monoxide or dioxide and hydrogen with or without methane at temperatures of from 300°—460° C. and pressures of 200—800 atmospheres.

- 254,784. PETROLEUM OILS, TREATING. E. C. R. Marks, London. From the Solar Refining Co., Lima, Ohio, U.S.A. Application date, April 3, 1925.

Spindel oils, lubricating oils, etc., are obtained from "skimmed" petroleum oils, that is, petroleum from which the lighter oils, such as gasoline and kerosene have been removed, by extracting with alcohol (preferably anhydrous) by a continuous process. The "skimmed" oil passes con-



tinuously through a series of units one of which is shown above. The oil enters by the pipe (12) the extraction chamber (1), which is provided with a series of baffles and steam heating coils (19), and is therein extracted by alcohol entering by the pipes (15) from the tank (7). The extracted oil passes by the outlet (16) to the second extraction unit. The alcoholic extract passes through a settling tank (2) and is distilled in the still (4); the alcohol vapour is condensed in the condenser (6) and returns to the tank (7) through a chamber (8) containing a dehydrating agent. The first extraction yields a spindle oil, and the succeeding extractions lubricating oils, while a residue of asphalt containing only a small proportion of carbon remains. It is stated that the process yields a much larger proportion of lubricating oils than the usual distillation process.

- 254,787. FORMAMIDE, HYDROCYANIC ACID, AND AMMONIUM CYANIDE, PRODUCTION OF. J. Y. Johnson, London. From the Badische Anilin und Soda Fabrik, Ludwigshafen-on-Rhine, Germany. Application date, April 6, 1925.

The process consists in the interaction of an alkyl formate vapour with ammonia in the presence of a dehydrating contact mass; the latter may consist of alumina, thoria, aluminium phosphate, zeolites, silica gel, etc. The nature of the products of the reaction depends principally upon the time of contact of the gases with the catalyst and the rate at which heat is transferred to the latter from the apparatus. Thus with a very short time of contact the products are chiefly formamide and an alcohol, but with longer contact the formamide splits up into water and hydrocyanic acid, the latter uniting with the excess of ammonia to form ammonium cyanide. According to an example by passing methyl formate vapour and ammonia over alumina at 260° C., hydrocyanic acid is obtained with a yield of 95 per cent. of that theoretically possible.

- 254,819. ORGANIC COMPOUNDS, SYNTHESIS OF. J. Y. Johnson, London. From the Badische Anilin und Soda Fabrik, Ludwigshafen-on-Rhine, Germany. Application date, March 9, 1925.

According to a known process alkyl formates can be obtained by the action of carbon monoxide on alcohols in the presence of sodium alcoholate. It is now found that organic compounds of comparatively high molecular weight can be obtained by the interaction of carbon monoxide and the vapours of aliphatic alcohols at elevated temperatures and pressures and in the presence of certain catalysts. The latter must contain a constituent of a dehydrating nature such as oxides of titanium, zirconium, thorium, cerium, chromium, aluminium and others, with or without an alkali or alkaline earth metal compound; a hydrogenating catalyst such as copper, silver, gold, etc., may also be present. The higher the temperature and the longer the time of contact of the gases and catalyst, the higher will be the boiling point of the product. If the gas mixture contains nitrogen, nitrogenous products such as amines may be produced. Instead of alcohols esters such as methyl formate, or, in the presence of hydrogen, aldehydes may be used as starting materials. The process may be carried out in a circulatory system, the products being fractionally condensed and the residual gases returned to the contact chamber. Among the products formed are valeric and butyric acid, isobutyl, normal propyl, amyl, and higher alcohols, and aldehydes. According to a typical example a mixture of 10 volumes of methanol vapour and 90 volumes of carbon monoxide is passed over a contact mass prepared from potassium chromate and potassium molybdate; the product contains higher alcohols, and esters.

- 254,939. SOLID CALCIUM NITRATE, PRODUCTION OF. J. Y. Johnson, London. From the Badische Anilin und Soda Fabrik, Ludwigshafen-on-Rhine, Germany. Application date, November 2, 1925.

This is effected by bringing highly concentrated solutions of the calcium nitrate into contact with heated surfaces. Preferably the surfaces of heated drums or rollers are employed, the solid nitrate being removed by scrapers. A temperature of 200—250° C. is suitable.

- 254,888. ARTIFICIAL RESINS, MANUFACTURE OF. A. Regal, II, Fischergasse, Brno, Czecho-Slovakia. Application date, July 29, 1925.

The condensation of phenols with formaldehyde for the purpose of producing resins is carried out in the presence of an indamine or an indophenol as the condensing agent. The indophenol or indamine may be produced *in situ* by combining a part of the phenol with a suitable *p*-disubstituted aromatic compound such as *p*-phenylenediamine, *p*-aminodimethylaniline, *p*-aminophenol, etc.; this is effected by adding a small quantity of an oxidising agent. Examples are

given according to which 1,000 parts of phenol and 17 parts of *p*-amidodimethylaniline, or *p*-amidophenol are treated first with a little permanganate and then condensed with 800 parts of formaldehyde solution; the products are greenish or blue resins.

NOTE.—Abstracts of the following specifications which are now accepted appeared in THE CHEMICAL AGE when they became open to inspection under the International Convention:—235,919 (Chemische Fabrik Griesheim-Elektron), relating to the production of halogenated vat-dyestuffs of the anthraquinone series, see Vol. XIII, p. 231; 239,169 (Akt.-Ges. für Chemiewerte), relating to the refining of vegetable and mineral oils, see Vol. XIII, p. 477; 240,168 (Farbwerke vorm. Meister, Lucius, and Brüning), relating to blue dyestuffs, see Vol. XIII, p. 528; 241,580 (Farbenfabriken vorm. F. Bayer and Co.), relating to mixtures yielding salts of sulphochloramides, see Vol. XIII, p. 663; 244,070 (Silesia Verein Chemische Fabriken), relating to disubstituted thioureas of symmetrical structure, see Vol. XIV, p. 161; 245,138 (V. G. R. Allienne), relating to an apparatus for burning sulphur, see Vol. XIV, p. 234; 245,765 (I. G. Farbenindustrie Akt.-Ges.), relating to azo dyestuffs, see Vol. XIV, p. 279; 246,116 (Sinclair Refining Co.), relating to the cracking of hydrocarbons, see Vol. XIV, p. 310.

International Specifications not yet Accepted

252,693. ALUMINA. Höganäs-Billesholms Aktiebolag, Höganäs, Sweden. International Convention date, May 27, 1925.

Bauxite or clay is fused with insufficient reducing agent, and an excess of reducing agent is then added to reduce all the impurities and convert some alumina to carbide. Iron ore and carbon are then added, and the reduced iron carries down the ferro-silicon suspended in the alumina. The alumina is then purified by treating with sulphuric acid of specific gravity 1.71 to remove the carbide, and then with dilute sulphuric acid to dissolve the ferro-silicon.

252,694. SYNTHETIC TANNING AGENTS. I. G. Farbenindustrie Akt.-Ges., Frankfurt-on-Main, Germany. (Assignees of Akt.-Ges. für Anilin Fabrikation, Treptow, Berlin.) International Convention date, May 28, 1925. Addition to 218,316. (See THE CHEMICAL AGE, Vol. XI, p. 245.)

Condensation products for use as tanning agents are obtained from salicylic acid sulphochloride and di-2-chlor-1-oxyphenyl carbonate, 1:3-dioxyphenyl diacetate, 1:2:4-trioxyphenyl-triacetate, acetyl-salicylic acid, or polysalicylide.

252,745. DYES. H. T. Bucherer, 381, Franz Joseph Street, Munich, Germany. International Convention date, May 29, 1925.

The preparation of azine dyes is effected by heating with concentrated sulphuric acid a mixture of an aromatic nitro compound and an aromatic amine in the molecular proportion 1:2. Thus a black dye is obtained by gradually adding sulphuric acid to a mixture of aniline and nitrobenzene and pouring the product into water; other similar dyes can be obtained from 1 or 2-aminoanthraquinone or 1:5- or 2:6-diaminoanthraquinone and nitrobenzene or dinitroanthraquinone.

253,082. ROSINS. Hercules Powder Co., 900, Market Street, Wilmington, Delaware, U.S.A. International Convention date, June 5, 1925.

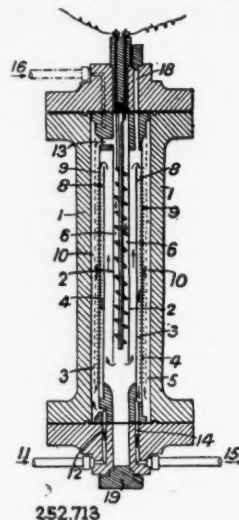
It has been found that low grade wood-rosins may be decolourised and purified by dissolving them in gasoline or even in heavier petroleum distillates and heating with furfural; on cooling to 60° F. the furfural separates out together with most of the colouring matters; the solution of the rosin is again treated with furfural in the same way and finally distilled to remove the solvent. The furfural is recovered from the residues by distillation.

252,715. SYNTHETIC RESINS. J. Scheiber, 76, Waldstrasse, Leipzig, and W. Noack, 36, Hamburgerstrasse, Leipzig, Germany. International Convention date, May 29, 1925.

The products obtained by moderate oxidation of mixtures of unsaturated fatty acids are heated with the products obtained by moderate oxidation of resin oil acids to obtain products resembling shellac.

252,713. CATALYTIC APPARATUS. L. Casale, 9, Via del Parlamento, Rome. International Convention date, May 28, 1925.

Gases for the synthesis of methyl, ethyl, and higher alcohols, etc., enter by passages 11, 12, the space between tubes 1, 4, thence through passage 13 to the space 6 containing an electric heater. The hot gases then pass through catalytic material



between tubes 2, 3 and then through space 8 to heat the incoming gases, the tube 3 being of low conductivity and the tubes 2, 4, being ribbed to facilitate heat exchange. The catalyst is introduced at 18 and removed at 19. By variation of the conditions, aldehydes, ketones, organic acids, and amines can be obtained.

LATEST NOTIFICATIONS.

256,176. Process for the separation of the active hormones from human and animal organs and liquids. Naamlouze Vennootschap Organon. July 31, 1925.

256,190. Atomisation and desiccation of liquids or solutions. Nestlé and Anglo-Swiss Condensed Milk Co. July 29, 1925.

256,193. Furnaces for the manufacture of aluminium. E. R. Lauber. July 30, 1925.

256,205. Manufacture of dyestuffs. Soc. of Chemical Industry in Basle. August 1, 1925.

256,225. Process for the production of alkyl and aralkyl resorcinols. H. Hirzel. July 30, 1925.

256,229. Manufacture and production of solutions of organic compounds. I.G. Farbenindustrie Akt.-Ges. August 1, 1925.

256,241. Electrolytic process for the manufacture of magnesium and the alkaline-earth metals such as calcium by the electrolysis of molten chlorides, and improved means for carrying the said process into effect. A. C. Jessup. July 29, 1925.

256,243. Manufacture of benziminazolone-arsinic acids. I. G. Farbenindustrie Akt.-Ges. July 31, 1925.

256,248. Producing resinous condensation products. Rohm and Haas Co. July 28, 1925.

256,258. Manufacture of acid-proof cementing compositions. I. G. Farbenindustrie Akt.-Ges. July 30, 1925.

256,272. Manufacture of azo-dyes. I. G. Farbenindustrie Akt.-Ges. August 1, 1925.

Specifications Accepted with Date of Application

233,734. High percentage anthracene and carbazole from crude anthracene, Process for obtaining. Verein für Chemische und Metallurgische Produkten. May 12, 1924.

234,852. Hydrofluoric acid, Manufacture of. M. Buchner. June 2, 1924.

236,170. High percentage anthracene and carbazole from crude anthracene, Process for obtaining. Verein für Chemische und Metallurgische Produkten. June 28, 1924.

238,225. New vat-dyestuffs, Manufacture of. Soc. of Chemical Industry in Basle. August 9, 1924.

240,170. Method of precipitating solid substances in coarse granular condition from solutions. Aktieselskapet Kristal. September 18, 1924.

243,766. Benzimidazoles, Process for the manufacture of. Farbenfabriken vorm. F. Bayer and Co. December 1, 1924.

244,782. Azo dyestuffs, Manufacture of. Akt.-Ges. für Anilin-Fabrikation. December 16, 1924.

- 255,516. Condensation products of phenol and the like. A. H. Brown and Siluminite Insulator Co., Ltd. April 17, 1925.
- 255,522. Arsenic pentoxide, Manufacture of. P. Askenasy and E. Eld. April 21, 1925.
- 255,527. Artificial silk, Manufacture of. M. P. Lanfrey and J. E. Brandenberger. April 22, 1925.
- 255,555. Leather, Dyeing. M. C. Lamb. April 27, 1925.
- 255,569. Burning material in rotary kilns, Process for. M. Vogel-Jorgensen. May 4, 1925.
- 255,616. Heavy hydrocarbons into light hydrocarbons, Process for converting. F. B. Dehn (Universal Oil Production Co.). June 29, 1925.
- 255,623. Artificial textile fibre and the process of manufacturing same. R. Attwater and A. Heinemann. July 4, 1925.
- 255,630. Intermediates of the anthraquinone series, Manufacture of. British Dyestuffs Corporation, Ltd., W. H. Perkin, and H. M. Bunbury. July 8, 1925.
- 255,639. Treatment of ores or materials containing oxide of iron for recovery of such oxide. S. G. S. Dicker (Kalmus, Comstock, and Westcott, Inc.). July 17, 1925.
- 255,655. Recovery of volatile substances. J. Y. Johnson (Badische Anilin und Soda Fabrik). August 12, 1925.
- 255,689. Pure glucoside of bulbous scillae, Process for the manufacture of. A. Home-Morton (F. Hoffmann la Roche Akt.-Ges.). October 14, 1925.
- 255,692. Phenolic condensation products, Manufacture of. H. Wade (S. Karpen and Bros.). October 23, 1925.
- 255,731. Benzanthrone derivatives containing sulphur, Manufacture and production of. J. Y. Johnson (I. G. Farbenindustrie Akt.-Ges.). January 3, 1926.
- 255,766. Ammonium phosphates, Manufacture and production of. J. Y. Johnson (I. G. Farbenindustrie Akt.-Ges.). March 3, 1926.

Applications for Patents

- Allan, W. G. Electrolytic apparatus. 19,265, 19,266. August 4.
- Armstrong Cork Co. and Wade, H. Manufacture of artificial cork. 19,516. August 6.
- I. G. Farbenindustrie Akt.-Ges. Manufacture of azo-dyestuffs. 19,205. August 3. (Germany, August 1, 1925.)
- I. G. Farbenindustrie Akt.-Ges. Process for effecting cleavage of fats and oils. 19,564. August 7. (Germany, November 20, 1925.)
- Krupp Grusonwerk Akt.-Ges. F. Treating tin-containing ores, etc. 19,408. August 5. (Germany, August 7, 1925.)
- Krupp Grusonwerk Akt.-Ges. F. Processes for purification of waste gases. 19,514. August 6. (Germany, August 7, 1925.)
- Norske Aktieselskab for Elektrokemisk Industri. Electrodes for electric furnaces. 19,186. August 3. (Norway, December 9, 1925.)
- Norske Aktieselskab for Elektrokemisk Industri. Electrodes for electric furnaces. 19,187. August 3. (Norway, September 19, 1925.)
- Nouvelle, A. Production of hydrogen. 19,391. August 5. (France, August 5, 1925.)
- Picard, H. F. K., and Sulman, H. L. Treatment of tin-bearing materials, etc. 19,359. August 5.
- Reavell, J. A. Dehydration of gases, etc. 19,479. August 6.
- Red River Refining Co., Inc. Mineral oil distillation. 19,536. August 7. (United States, August 24, 1925.)
- Schoenhofer, R. Production of plastic material. 19,390. August 5.
- Scottish Dyes, Ltd., Thomas, J., and Thomson, R. F. Dyes, etc. 19,311. August 4.
- Soc. of Chemical Industry in Basle. Manufacture of dyestuffs. 19,565. August 7. (Switzerland, September 16, 1925.)
- Still, C. (firm of). Eliminating sulphuretted hydrogen from gases. 19,303. August 4. (Belgium, May 25.)
- Still, C. (firm of). Manufacture of sulphur. 19,487. August 6. (Germany, August 6, 1925.)

Permitted Explosives

THE Secretary for Mines has made an Order (No. 887, dated July 14, 1926), adding to the list of "Permitted Explosives" to be used in certain classes of mines the product known as "Plastex," manufactured by Explosives and Chemical Products, Ltd., at Bramble Island, Essex. The constitution of the explosive and the conditions under which it is to be used are given. The Order also restores to the list of "Permitted Explosives" the following explosives manufactured by the Cape Explosives Works, Ltd., at Somerset West, Cape Province, South Africa: ammodyne, geligdynite, ligdynite, super-ammodyne, super-ligdynite. The Order (by post 24d.) can be purchased from any bookseller or from H.M. Stationery Office.

The Chlorination of Water

An Installation for Swimming Baths

RAPID progress is being made with modern methods for the continuous purification of swimming bath water, based on sterilisation with a measured trace of chlorine gas, generally about 1 part per 2,000,000 parts of water being employed. The Shoreditch Borough Council are about to install a "Chloronome" plant on these lines for their two baths at Hoxton, having a capacity of 220,000 gallons, and another recent installation is at Beckenham (Kent).

The complete process consists in passing the bath water by means of a steam or motor driven pump constantly through a circuit which comprises a rough gauge removable strainer, treatment with a coagulant such as alumina-ferric and soda-ash to separate all the colouring matter and the impurities, the latest type of pressure sand filter with compressed air cleaning, aeration to maintain the sparkling condition of fresh water, continuous sterilisation with chlorine gas by means of the "Chloronome" apparatus, and finally the use, when necessary, of a heated calorifier to maintain a constant temperature of about 72° in summer and 78° F. in winter.

One of the essential features of the Paterson "Chloronome" is that the chlorine gas is first dissolved in a small amount of water, which is then added to the main bulk so as to ensure immediate and equal chlorination of the whole. The use of pure liquid chlorine in cylinders ensures easy and accurate control over the amount added. No taste and smell is given to the water, nor are there any unpleasant effects on the eyes and throats of the bathers. The fact that chlorine in cylinders is always a 100 per cent. product means that no soluble salts are added to the water. The total cost of running a bath on these lines, including coagulants, working expenses and interest on capital, is found to be, as a rule, lower than the usual methods of filling up a bath with town's water and emptying it every few days, quite apart from considerations of health and comfort.

American Fear of the I.G.

THE attitude of American chemical interests towards the I.G. Farbenindustrie is indicated in the following comment on the subject in *Drug and Chemical Markets* (New York):—

"The I.G. expansion, reaching out from a centre of coal-tar chemistry, embraces to-day such widely divergent fields as fertilisers and artificial jewels, motor fuel and rayon. Each link of these activities is chemically forged not only to the links before and behind it, but also on both sides, so that the trust is a closely woven net rather than a chain of chemical operations. The vision of Stinnes has become in reality the most comprehensive and powerful industrial organisation in the world to-day. There is a threat to the entire world in such a chemical colossus with its arms embracing all chemical markets the earth around. Remembering the vital position of chemicals in every industrial operation and not forgetting their place in modern warfare, the contemplation of these world-wide chemical activities is disconcerting enough, especially when even the faintest approximation of such interlocking interests—chemical, financial and commercial—is utterly impossible in the United States. Our demagogues would be well supported in their denunciation of an American I.G. Nevertheless, that German giant has drawn a pattern which, if it is an unattainable ideal, is still a potent inspiration."

Mineral Survey by Air in Rhodesia

A CONTRACT has been entered into between Minerals Separation, Ltd., and the Aircraft Operating Company under which the latter company will send an air survey expedition to Northern Rhodesia to carry out air mapping and reconnaissance of the concessions held by the Rhodesian Congo Border Concession, Ltd., of which Minerals Separation, Ltd., are the general managers. The concessions to be so surveyed cover an area of 52,000 square miles, and are regarded as being especially rich in copper. The use of aircraft by a mining concern for a systematic and scientifically organised photographic examination of an area for the location of mineral deposits marks a new departure.

Weekly Prices of British Chemical Products

The prices and comments given below respecting British chemical products are based on direct information supplied by the British manufacturers concerned. Unless otherwise qualified, the figures quoted apply to fair quantities, net and naked at makers' works.

General Heavy Chemicals

ACID ACETIC, 40% TECH.—£19 per ton.
 ACID BORIC, COMMERCIAL.—Crystal, £37 per ton, Powder, £39 per ton.
 ACID HYDROCHLORIC.—3s. 9d. to 6s. per carboy d/d, according to purity, strength, and locality.
 ACID NITRIC, 80° Tw.—£21 10s. to £27 per ton, makers' works, according to district and quality.
 ACID SULPHURIC.—Average National prices f.o.r. makers' works, with slight variations up and down owing to local considerations; 140° Tw., Crude Acid, 60s. per ton. 168° Tw., Arsenical, £5 10s. per ton. 168° Tw., Non-arsenical, £6 15s. per ton.
 AMMONIA ALKALI.—£6 15s. per ton f.o.r. Special terms for contracts.
 BISULPHITE OF LIME.—£7 10s. per ton, packages extra, returnable.
 BLEACHING POWDER.—Spot, £9 10s. d/d; Contract, £8 10s. d/d, 4-ton lots.
 BORAX, COMMERCIAL.—Crystal, £23 per ton. Powder, £24 per ton. (Packed in 2-cwt. bags, carriage paid any station in Great Britain.)
 CALCIUM CHLORATE (SOLID).—£5 12s. 6d. to £5 17s. 6d. per ton d/d, cart. paid.
 COPPER SULPHATE.—£25 to £25 10s. per ton.
 METHYLATED SPIRIT 64 O.P.—Industrial, 2s. 5d. to 2s. 11d. per gall. Mineralised, 3s. 8d. to 4s. per gall., in each case according to quantity.
 NICKEL SULPHATE.—£38 per ton d/d.
 NICKEL AMMONIA SULPHATE.—£38 per ton d/d.
 POTASH CAUSTIC.—£30 to £33 per ton.
 POTASSIUM BICHROMATE.—4d. per lb.
 POTASSIUM CHLORATE.—3½d. per lb., ex wharf, London, in cwt. kegs.
 SALAMMONIAC.—£45 to £50 per ton d/d. Chloride of ammonia, £37 to £45 per ton, cart. paid.
 SALT CAKE.—£3 15s. to £4 per ton d/d. In bulk.
 SODA CAUSTIC, SOLID.—Spot lots delivered, £15 2s. 6d. to £18 per ton, according to strength; 20s. less for contracts.
 SODA CRYSTALS.—£5 to £5 5s. per ton ex railway depots or ports.
 SODIUM ACETATE 97/98%.—£21 per ton.
 SODIUM BICARBONATE.—£10 10s. per ton, cart. paid.
 SODIUM BICHROMATE.—3½d. per lb.
 SODIUM BISULPHITE POWDER 60/62%.—£17 per ton for home market, 1-cwt. iron drums included.
 SODIUM CHLORATE.—3d. per lb.
 SODIUM NITRITE, 100% BASIS.—£27 per ton d/d.
 SODIUM PHOSPHATE.—£14 per ton, f.o.r. London, casks free.
 SODIUM SULPHATE (GLAUBER SALTS).—£3 12s. 6d. per ton.
 SODIUM SULPHIDE CONC. SOLID, 60/65.—£13 5s. per ton d/d. Contract, £13. Cart. paid.
 SODIUM SULPHIDE CRYSTALS.—Spot, £8 12s. 6d. per ton d/d. Contract, £8 10s. Cart. paid.
 SODIUM SULPHITE, PEA CRYSTALS.—£14 per ton f.o.r. London, 1-cwt. kegs included.

Coal Tar Products

ACID CARBOLIC CRYSTALS.—4½d. to 5d. per lb. Crude 60's, 1s. 4d. to 1s. 5d.
 ACID CRESYLIC 97/99.—2s. to 2s. 2d. per gall. Pale, 95%, 1s. 10d. to 2s. per gall. Dark, 1s. 9d. to 1s. 10d. per gall. Steady.
 ANTHRACENE.—A quality, 2½d. to 3d. per unit.
 ANTHRACENE OIL, STRAINED.—8d. to 8½d. per gall. Unstrained, 7½d. to 8d. per gall.
 BENZOL.—Crude 65's, 1s. 4d. to 1s. 5d. per gall., ex works in tank wagons. Standard Motor, 2s. to 2s. 3d. per gall., ex works in tank wagons. Pure, 2s. 3d. to 2s. 9d. per gall., ex works in tank wagons.
 TOLUOL.—90%. 2s. to 3s. per gall. Pure, 2s. 3d. to 3s. 3d. per gall.
 XYLOL.—2s. 4d. to 3s. per gall. Pure, 3s. 6d. per gall.
 CREOSOTE.—Cresylic, 20/24%, 10d. per gall. Standard specification, middle oil, 6½d. to 7½d. per gall. Heavy, 7½d. to 8½d. per gall.
 NAPHTHA.—Crude, 10d. to 1s. 1d. per gall. according to quality. Solvent 90/160, 2s. to 2s. 3d. per gall. Solvent 90/190, 1s. 3½d. to 1s. 6d. per gall.
 NAPHTHALENE CRUDE.—Drained Creosote Salts, £3 10s. to £5 per ton. Whized or hot pressed, £5 10s. to £7 10s.
 NAPHTHALENE.—Crystals and Flaked, £11 10s. to £13 per ton, according to districts.
 PITCH.—Medium soft, 85s. to 92s. 6d. per ton.
 PYRIDINE.—90/140, 17s. to 20s. per gall. Heavy, 7s. to 10s. per gall.

Intermediates and Dyes

In the following list of Intermediates delivered prices include packages except where otherwise stated.

ACID AMIDONAPHTHOL DISULPHO (1-8-2-4).—10s. 9d. per lb.
 ACID ANTHRANILIC.—6s. 6d. per lb. 100%.
 ACID BENZOIC.—1s. 9d. per lb.
 ACID GAMMA.—8s. per lb.
 ACID H.—3s. 3d. per lb. 100% basis d/d.
 ACID NAPHTHIONIC.—2s. 2d. per lb. 100% basis d/d.
 ACID NEVILLE AND WINTHER.—4s. 9d. per lb. 100% basis d/d.
 ACID SULPHANILIC.—9d. per lb. 100% basis d/d.
 ANILINE OIL.—9½d. per lb. naked at works.
 ANILINE SALTS.—9½d. to 7½d. per lb. naked at works.
 BENZALDEHYDE.—2s. 1d. per lb.
 BENZIDINE BASE.—3s. 3d. per lb. 100% basis d/d.
 o-CRESOL 29/31° C.—3d. to 3½d. per lb.
 m-CRESOL 98/100%.—2s. 1d. to 2s. 3d. per lb.
 p-CRESOL 32/34° C.—2s. 1d. to 2s. 3d. per lb.
 DICHLORANILINE.—2s. 3d. per lb.
 DIMETHYLANILINE.—1s. 11d. to 2s. per lb. d/d. Drums extra.
 DINITROBENZENE.—9d. per lb. naked at works.
 DINITROCHLOROBENZENE.—£84 per ton d/d.
 DINITROTOLUENE.—48/50° C. 8d. per lb. naked at works. 66/68° C., 9d. per lb. naked at works.
 DIPHENYLANILINE.—2s. 10d. per lb. d/d.
 o-NAPHTHOL.—2s. per lb. d/d.
 B-NAPHTHOL.—11d. to 1s. per lb. d/d.
 o-NAPHTHYLAMINE.—1s. 3d. per lb. d/d.
 B-NAPHTHYLAMINE.—3s. 2d. per lb. d/d.
 o-NITRANILINE.—5s. 9d. per lb.
 m-NITRANILINE.—3s. 3d. per lb. d/d.
 p-NITRANILINE.—1s. 9d. per lb. d/d.
 NITROBENZENE.—5d. per lb. naked at works.
 NITRONAPHTHALENE.—10d. per lb. d/d.
 R. SALT.—2s. 4d. per lb. 100% basis d/d.
 SODIUM NAPHTHIONATE.—1s. 9d. per lb. 100% basis d/d.
 o-TOLUIDINE.—8d. per lb. naked at works.
 p-TOLUIDINE.—2s. 2d. per lb. naked at works.
 m-XYLIDINE ACETATE.—2s. 11d. per lb. 100%.

Wood Distillation Products

ACETATE OF LIME.—Brown, £8. Grey, £17 10s. per ton. Liquor, 9d. per gall. 32° Tw.
 CHARCOAL.—£7 to £9 per ton, according to grade and locality.
 IRON LIQUOR.—1s. 6d. per gall. 32° Tw. 1s. 2d. per gall., 24° Tw.
 RED LIQUOR.—9½d. to 1s. per gall.
 WOOD CREOSOTE.—2s. 9d. per gall. Unrefined.
 WOOD NAPHTHA, MISCIBLE.—3s. 6d. per gall. 60% O.P. Solvent, 3s. 6d. per gall. 40% O.P.
 WOOD TAR.—£3 to £5 per ton, according to grade.
 BROWN SUGAR OF LEAD.—£39 to £40 per ton.

Rubber Chemicals

ANTIMONY SULPHIDE.—Golden, 6d. to 1s. 5d. per lb., according to quality, Crimson, 1s. 3d. to 1s. 7½d. per lb., according to quality.
 ARSENIC SULPHIDE, YELLOW.—2s. per lb.
 BARYTES.—£3 10s. to £6 15s. per ton, according to quality.
 CADMIUM SULPHIDE.—2s. 9d. per lb.
 CARBON BISULPHIDE.—£20 to £25 per ton, according to quantity.
 CARBON BLACK.—5½d. per lb., ex wharf.
 CARBON TETRACHLORIDE.—£46 to £55 per ton, according to quantity, drums extra.
 CHROMIUM OXIDE, GREEN.—1s. 2d. per lb.
 DIPHENYLGUANIDINE.—3s. 9d. per lb.
 INDIARUBBER SUBSTITUTES, WHITE AND DARK.—5½d. to 6½d. per lb.
 LAMP BLACK.—£35 per ton, barrels free.
 LEAD HYPOSULPHITE.—9d. per lb.
 LITHOPONE, 30%.—£22 10s. per ton.
 MINERAL RUBBER "RUBPRON".—£13 12s. 6d. per ton f.o.r. London.
 SULPHUR.—£9 to £11 per ton, according to quality.
 SULPHUR CHLORIDE.—4d. per lb., carboys extra.
 SULPHUR PRECIP. B.P.—£47 10s. to £50 per ton.
 THIOCARBAMIDE.—2s. 6d. to 2s. 9d. per lb. carriage paid.
 THIOCARBAMILIDE.—2s. 1d. to 2s. 3d. per lb.
 VERMILION, PALE OR DEEP.—5s. 3d. per lb.
 ZINC SULPHIDE.—1s. 1d. per lb.

Pharmaceutical and Photographic Chemicals

ACID, ACETIC, 80% B.P.—£39 per ton ex wharf London in glass containers.

ACID, ACETYL SALICYLIC.—2s. 4d. to 2s. 6d. per lb. Brisk demand.

ACID, BENZOIC B.P.—2s. to 2s. 3d. per lb., according to quantity.

ACID, BORIC B.P.—Crystal, £43 per ton; Powder, £47 per ton. Carriage paid any station in Great Britain, in ton lots.

ACID, CAMPHORIC.—19s. to 21s. per lb.

ACID, CITRIC.—1s. 4d. to 1s. 4½d. per lb., less 5%.

ACID, GALLIC.—2s. 8d. per lb. for pure crystal, in cwt. lots.

ACID, PYROGALLIC, CRYSTALS.—6s. 7d. per lb. Resublimed, 7s. 3d.

ACID, SALICYLIC.—1s. 4d. to 1s. 5½d. per lb. Technical.—10½d. to 11d. per lb.

ACID, TANNIC B.P.—2s. 10d. per lb.

ACID, TARTARIC.—1s. 0½d. per lb., less 5%. Market firm.

AMIDOL.—8s. 6d. per lb., d/d.

ACETANILIDE.—1s. 7d. to 1s. 8d. per lb. for quantities.

AMIDOPYRIN.—12s. 6d. per lb.

AMMONIUM BENZOATE.—3s. 3d. to 3s. 6d. per lb., according to quantity.

AMMONIUM CARBONATE B.P.—£37 per ton. Powder, £39 per ton in 5 cwt. casks.

ATROPINE SULPHATE.—11s. per oz. for English make.

BARBITONE.—9s. per lb.

BENZONAPHTHOL.—3s. 3d. per lb. spot.

BISMUTH CARBONATE.—12s. 6d. to 14s. 3d. per lb.

BISMUTH CITRATE.—9s. 6d. to 11s. 3d. per lb.

BISMUTH SALICYLATE.—10s. 3d. to 12s. per lb.

BISMUTH SUBNITRATE.—10s. 9d. to 12s. 6d. per lb. according to quantity.

BORAX B.P.—Crystal, £27; Powder, £28 per ton. Carriage paid any station in Great Britain, in ton lots.

BROMIDES.—Potassium, 1s. 9d. to 1s. 11d. per lb.; sodium, 1s. 11d. to 2s. 2d. per lb.; ammonium, 2s. 2d. to 2s. 5d. per lb., all spot.

CALCIUM LACTATE.—1s. 4d. to 1s. 6d.

CHLORAL HYDRATE.—3s. 3d. to 3s. 6d. per lb., duty paid.

CHLOROFORM.—2s. 3d. to 2s. 7½d. per lb., according to quantity.

CRESOTIC CARBONATE.—6s. per lb.

FORMALDEHYDE.—£40 per ton, in barrels ex wharf.

GUAIACOL CARBONATE.—7s. 6d. per lb.

HEXAMINE.—2s. 4d. to 2s. 6d. per lb.

HOMATROPINE HYDROBROMIDE.—30s. per oz.

HYDRASTINE HYDROCHLORIDE.—English make offered at 120s. per oz.

HYDROGEN PEROXIDE (12 VOLS.).—1s. 8d. per gallon f.o.r. makers' works, naked.

HYDROQUINONE.—4s. 3d. per lb., in cwt. lots.

HYPOPHOSPHITES.—Calcium, 3s. 6d. per lb., for 28-lb. lots; potassium, 4s. 1d. per lb.; sodium, 4s. per lb.

IRON AMMONIUM CITRATE B.P.—2s. to 2s. 3d. per lb. Green, 2s. 4d. to 2s. 9d. per lb. U.S.P., 2s. 1d. to 2s. 4d. per lb.

IRON PERCHLORIDE.—20s. to 22s., according to quantity.

MAGNESIUM CARBONATE.—Light Commercial, £31 per ton net.

MAGNESIUM OXIDE.—Light Commercial, £67 10s. per ton, less 2½%; price reduced; Heavy Commercial, £22 per ton, less 2½%; Heavy Pure, 2s. to 2s. 3d. per lb., according to quantity.

MENTHOL.—A.B.R. recrystallised B.P., 19s. 9d. net per lb., Synthetic, 11s. 6d. to 13s. per lb., according to quantity.

MERCURIALS.—Red oxide, 5s. 11d. to 6s. 1d. per lb.; Calomel, 4s. 9d. to 4s. 11d. per lb.; white precipitate, 4s. 9d. to 4s. 11d. per lb.; Calomel, 4s. 6d. to 4s. 8d. per lb.

METHYL SALICYLATE.—1s. 7d. per lb.

METHYL SULPHONAL.—16s. 6d. per lb.

METOL.—10s. per lb. British make.

PARAFORMALDEHYDE.—1s. 9d. for 100% powder.

PARALDEHYDE.—1s. 4d. per lb. (1s. 2d. in carboys.)

PERNACETIN.—4s. per lb.

PERNAZONE.—6s. per lb.

PERNOLPHTHALEIN.—4s. per lb.

POTASSIUM BITARTRATE 99/100% (Cream of Tartar).—80s. per cwt., less 2½% for ton lots.

POTASSIUM CITRATE.—1s. 11d. to 2s. 2d. per lb.

POTASSIUM FERRICYANIDE.—1s. 9d. per lb. in cwt. lots. Quiet.

POTASSIUM IODIDE.—16s. 8d. to 17s. 2d. per lb., according to quantity.

POTASSIUM METABISULPHITE.—6d. per lb., 1-cwt. kegs included, f.o.r. London.

POTASSIUM PERMANGANATE.—B.P. crystals, 6½d. per lb., spot.

QUININE SULPHATE.—1s. 8d. to 1s. 9d. per oz., in 100 oz. tins.

RESORCIN.—4s. to 5s. per lb., spot.

SACCHARIN.—55s. per lb.

SALOL.—3s. per lb.

SODIUM BENZOATE, B.P.—1s. 10d. to 2s. 2d. per lb.

SODIUM CITRATE, B.P.C., 1911.—1s. 8d. to 1s. 11d. per lb., B.P.C., 1923. 1s. 11d. to 2s. 2d. per lb., according to quantity.

SODIUM FERROCYANIDE.—4d. per lb. carriage paid.

SODIUM HYPOSULPHITE, PHOTOGRAPHIC.—£15 5s. per ton, d/d consignee's station in 1-cwt. kegs.

SODIUM NITROPRUSSIDE.—16s. per lb.

SODIUM POTASSIUM TARTRATE (ROCHELLE SALT).—75s. to 80s. per cwt., according to quantity.

SODIUM SALICYLATE.—Powder, 1s. 9d. to 1s. 10d. per lb. Crystal, 1s. 10d. to 1s. 11d. per lb.

SODIUM SULPHIDE, PURE RECRYSTALLISED.—10d. to 1s. 2d. per lb.

SODIUM SULPHITE, ANHYDROUS, £27 10s. to £28 10s. per ton, according to quantity; 1-cwt. kegs included.

SULPHONAL.—11s. per lb.

TARTAR EMBIC, B.P.—Crystal or Powder, 1s. 11d. to 2s. per lb.

TEYMOL.—12s. to 13s. 9d. per lb.

Perfumery Chemicals

ACETOPHENONE.—10s. per lb.

AUBEPINE (EX ANETHOL).—10s. per lb.

AMYL ACETATE.—3s. per lb.

AMYL BUTYRATE.—5s. 6d. per lb.

AMYL SALICYLATE.—3s. 3d. per lb.

ANETHOL (M.P. 21/22° C.).—5s. 9d. per lb.

BENZYL ACETATE FROM CHLORINE-FREE BENZYL ALCOHOL.—2s. 1d. per lb.

BENZYL ALCOHOL FREE FROM CHLORINE.—2s. 1d. per lb.

BENZALDEHYDE FREE FROM CHLORINE.—2s. 7d. per lb.

BENZYL BENZOATE.—2s. 4d. per lb.

CINNAMIC ALDEHYDE NATURAL.—17s. 9d. per lb.

COUMARIN.—11s. 9d. per lb.

CITRONELLOL.—15s. per lb.

CITRAL.—10s. per lb.

ETHYL CINNAMATE.—10s. per lb.

ETHYL PHTHALATE.—3s. per lb.

EUGENOL.—10s. per lb.

GERANIOL (PALMAROSA).—20s. per lb.

GERANIOL.—6s. 3d. to 11s. 6d. per lb.

HELIOTROPINE.—5s. per lb.

ISO EUGENOL.—14s. 6d. per lb.

LINALOL.—14s. to 17s. per lb.

LINALYL ACETATE.—17s. to 19s. per lb.

METHYL ANTHRANILATE.—9s. 3d. per lb.

METHYL BENZOATE.—5s. per lb.

MUSK KETONE.—34s. 6d. per lb.

MUSK XYLOL.—8s. per lb.

NEROLIN.—3s. 9d. per lb.

PHENYL ETHYL ACETATE.—12s. per lb.

PHENYL ETHYL ALCOHOL.—9s. 3d. per lb.

RHODINOL.—27s. 6d. per lb.

SAFROL.—1s. 6d. per lb.

TERPINEOL.—1s. 6d. per lb.

VANILLIN.—21s. 9d. per lb.

Essential Oils

ALMOND OIL.—11s. 6d. per lb.

ANISE OIL.—3s. per lb.

BERGAMOT OIL.—27s. per lb.

BOURBON GERANIUM OIL.—13s. 3d. per lb.

CAMPHOR OIL.—67s. 6d. per cwt.

CANANGA OIL, JAVA.—20s. per lb.

CINNAMON OIL, LEAF.—6d. per oz.

CASSIA OIL, 80/85%.—8s. 9d. per lb.

CITRONELLA OIL.—Java, 85/90%, 2s. 7d. Ceylon, 2s. per lb.

CLOVE OIL.—7s. per lb.

EUCALYPTUS OIL, 70/75%.—2s. per lb.

LAVENDER OIL.—French 38/40%, Esters, 15s. 6d. per lb.

LEMON OIL.—8s. 3d. per lb.

LEMONGRASS OIL.—4s. 6d. per lb.

ORANGE OIL, SWEET.—10s. 9d. per lb.

OTTO OF ROSE OIL.—Bulgarian, 65s. per oz. Anatolian, 30s. per oz.

PALMA ROSA OIL.—9s. 9d. per lb.

PEPPERMINT OIL.—Wayne County, 67s. 6d. per lb. Japanese, 11s. 9d. per lb.

PETITGRAIN OIL.—9s. per lb.

SANDAL WOOD OIL.—Mysore, 26s. per lb. Australian, 17s. 3d. per lb.

London Chemical Market

The following notes on the London Chemical Market are specially supplied to THE CHEMICAL AGE by Messrs. R. W. Greeff & Co., Ltd., and Messrs. Chas. Page & Co., Ltd., and may be accepted as representing these firms' independent and impartial opinions.

London, August 12, 1926.

INQUIRY has been a little brighter this week, although orders are still in the main limited to near requirements. Export demand has sensibly improved, although much of the trade offering is at unworkable limits.

General Chemicals

ACETONE.—Market continues nominal, and as a result of the large break in value, demand has fallen away considerably.

ACID ACETIC is quite steady and a fair business is reported, especially on export account.

ACID FORMIC.—Unchanged in value but only in moderate demand. ACID LACTIC is active and the price is unchanged at £43 per ton for 50% by weight.

ACID OXALIC is in small request only at 3½d. to 3¾d. per lb.

ACID TARTARIC.—Considering the season this article is only in small demand and is quoted at 11½d. to 11¾d. per lb.

ALUMINA SULPHATE.—Price is well maintained, although there is keen competition for all business passing; price ranges from £5 10s. to £5 15s. per ton for 17/18%.

AMMONIUM CHLORIDE is dull and the market may be stated at about £19 10s. to £20 per ton.

ARSENIC still continues in poor demand and the value is about £14 10s. to £15 10s. per ton according to quantity and position.

BARIUM CHLORIDE has been quite active and supplies are becoming scarce. The market shows an upward tendency at £10 per ton.

EPSOM SALTS are firm and in good demand.

FORMALDEHYDE.—A moderate business is reported and the price is now very steady at £40 to £42 per ton, with the possibility of higher values.

IRON SULPHATE continues scarce and firm.

LEAD ACETATE.—The value is well maintained at £46 10s. for white and £43 per ton for brown, and there is an active demand both for home trade and for export.

METHYL ALCOHOL.—Unchanged.

METHYL ACETONE is unchanged in value and a fair business is noted at £55 per ton.

POTASSIUM CHLORATE continues in good request and is quoted at about £32 per ton.

POTASSIUM PERMANGANATE is firmer and B.P. can be obtained at about 7d. to 7½d. per lb.

POTASSIUM PRUSSIAN continues extremely firm and is quoted at 7d. per lb. on the spot.

SODIUM ACETATE is perhaps in a little better supply but price still ranges at round about £21 per ton.

SODIUM BICHROMATE.—A fair amount of business has been booked, but foreign competition is keen.

SODIUM NITRITE is steady and in moderate request at £20 10s. per ton.

SODIUM PHOSPHATE is very firm and in good demand at £13 10s. per ton.

SODIUM PRUSSIAN is quoted at 3½d. per lb., with a fair volume of business passing.

SODIUM SULPHIDE is unchanged with continental material continuing to compete.

ZINC SULPHATE is firmer and in short supply at £14 per ton.

Coal Tar Products

Prices remain the same as previously reported, and the position, owing to the continued coal strike, is unchanged.

Latest Oil Prices

LONDON.—LINSEED OIL steady. Spot, £34 10s.; August, £33 15s., sellers, after £33 12s. 6d. taken; September-December, £34, paid and sellers at £34 2s. 6d.; January-April, £34 7s. 6d., paid and sellers at £34 10s. RAPE OIL steady. Crude extracted, £49; technical refined, £51; Japanese crude, August-September, £44 10s. COTTON OIL slow and unaltered. Refined common edible, £46; Egyptian crude, £40 10s.; deodorised, £48. TURPENTINE easier. American, spot, 66s. 9d., sellers; September-December, 67s. 9d., sellers, after 67s. 3d. taken; and January-April, 69s. 9d. sellers, per cwt.

HULL.—LINSEED OIL.—Naked, spot to September-December, £34 7s. 6d.; January-April, £34 10s. COTTON OIL.—Naked, Bombay crude, £36; Egyptian crude, £38 10s.; edible refined, £44; technical, £40. PALM KERNEL OIL.—Crushed naked, 5½ per cent., £41. GROUNDNUT OIL.—Crushed/extracted, £45; deodorised, £49. SOYA OIL.—Extracted and crushed, £38; deodorised, £41 10s. RAPE OIL.—Crude/extracted, £47 10s.; refined, £49 10s. per ton. CASTOR OIL.—Pharmaceutical, 49s. 6d.; first, 44s. 6d.; and second, 42s. 6d. per cwt., net, cash terms, ex-mill. COD OIL unaltered.

Nitrogen Products

Export.—As far as British producers are concerned the market is quiet. The small quantities available from time to time are disposed of at about £10 15s. per ton, f.o.b. U.K. port in single bags. Continental producers continue to make good sales for Mediterranean countries and for the Far East. Our information is that prices are on the equivalent of the above prices.

Home.—Since the announcement of home prices British producers have received orders for forward delivery. It appears that some of the merchants and fertiliser manufacturers are anxious about supplies and are endeavouring to ensure delivery of certain quantities. The trade generally seems very pleased that British producers are now selling on the basis of 20.6 per cent. nitrogen instead of 21.1 per cent. Selling on the higher figure led to a good number of adjustments as deliveries generally turned out a little below.

Nitrate of Soda.—Producers continue to make small sales on the basis of 18s. 5d. per metric quintal. These sales are mainly for shipment to the continent, to Egypt and to the United States. It seems unlikely that there will be any heavy buying until the end of the year.

Australian Phosphate Commission

Mr. BRUCE, the Federal Prime Minister, has informed Parliament that the Government has decided to dispense forthwith with the services of Mr. Pope, Australian Commissioner on the British Phosphate Commission, and to give him three months' salary. This action follows the presentation of a report by Sir Arthur Robinson, a former Attorney-General, who was appointed Royal Commissioner to investigate the inharmonious relations between Mr. Pope and his fellow-commissioners, and Mr. Pope and the executive staff. Mr. Bruce said the Governments of Great Britain and New Zealand had agreed to postpone the proposed removal of the commission's headquarters from Australia.

The Duty on Chilean Nitrate

IN consequence of the rumours as to the attitude of the Chilean Government in regard to a reduction of the present export duty on Chilean nitrate of soda, the Chilean Nitrate Committee, Friars House, London, authorises the publication of the following statement received by them from the Producers' Association in Valparaiso:—

"A special Commission from the Directorate has been received in audience by the President of the Republic, with whom was the Minister of Finance. The Commission explained that it is absolutely essential to know the Government's views concerning its policy towards the export duty, in order to allay the prevailing uncertainty in the market. Both the President and the Finance Minister emphatically declared that the present situation of the national finances made it impossible to entertain any reduction of the export duty before June 30, 1927. At the same time they assured the Commission that the Government policy towards the nitrate industry is to assist it in every way possible, as Chile cannot afford to have its principal industry crippled, and the promise was given that the Government would from now onwards study means for assisting it during the next nitrate year, that is, after June 30, 1927."

MINOR EXPLOSIONS OF COAL GAS, flinging up small volumes of coal, have been causing some anxiety in a vessel lying at a Middlesbrough quay, and firemen have been continually spraying water on the smouldering fuel while the task of unloading the bunkers with trucks proceeded.

ETHER VAPOUR ignited by a glowing cigar, is believed to have caused the death of a man in a Copenhagen residential suburb who, having an attack of faintness, withdrew the cork from a bottle of ether he was carrying and is believed to have ignited this with his cigar, with fatal results.

Scottish Chemical Market

The following notes on the Scottish Chemical Market are specially supplied to THE CHEMICAL AGE by Messrs. Charles Tennant and Co., Ltd., Glasgow, and may be accepted as representing the firm's independent and impartial opinions.

Glasgow, August 11, 1926.

WITH resumption of work in England enquiry on the heavy chemical market has been rather better than during the preceding week.

There is still a fair amount of inquiry for export and prices generally remain unchanged.

Industrial Chemicals

ACID ACETIC, 98/100%.—£55 to £67 per ton, according to quantity and packing, c.i.f. U.K. port; 80% pure, £39 to £41 per ton; 80% technical, £38 to £39 per ton.

ACID BORIC.—Crystal, granulated or small flakes, £37 per ton; powdered, £39 per ton, packed in bags, carriage paid U.K. stations.

ACID CARBOLIC, ICE CRYSTALS.—Now quoted 4½d. per lb., delivered or f.o.b. U.K. port, but this price could probably be shaded for large quantities.

ACID CITRIC, B.P. CRYSTALS.—In moderate demand and price unchanged at 1s. 3½d. per lb., less 5% ex store. Offered for prompt shipment at 1s. 3½d. per lb., less 5%, ex wharf.

ACID FORMIC, 85%.—On offer from the continent at £49 10s. per ton, c.i.f. U.K. port. Spot material quoted £52 5s. per ton, ex store.

ACID HYDROCHLORIC.—In little demand. Price 6s. 6d. per carboy, ex works.

ACID NITRIC, 80°.—Usual steady demand and price unchanged at £23 5s. per ton, ex station, full truck loads.

ACID OXALIC, 98/100%.—Remains unchanged at about 3½d. per lb., ex store. Offered for early delivery from the continent at 3½d. per lb., ex wharf.

ACID SULPHURIC.—144°, £3 12s. 6d. per ton; 168°, £7 per ton, ex works, full truck loads. Dearsenicated quality 20s. per ton more.

ACID TARTARIC, B.P. CRYSTALS.—In good demand and price for spot material advanced to about 11½d. per lb., less 5%, ex store. Quoted for early delivery at 11½d. per lb., less 5% ex wharf.

ALUMINA SULPHATE, 17/18%, IRON FREE.—On offer from the continent at about £5 8s. 6d. per ton, c.i.f. U.K. ports. Spot material quoted £6 5s. per ton, ex store.

ALUM LUMP POTASH.—Spot material unchanged at about £9 5s. per ton, ex store. Quoted £8 per ton, c.i.f. U.K. ports, prompt, shipment. Crystal powder on offer at about £7 15s. per ton, c.i.f. U.K. port. Spot material available at £8 7s. 6d. per ton, ex store.

AMMONIA ANHYDROUS.—Imported material selling at about 11½d. to 11¾d. per lb., ex wharf, containers extra and returnable.

AMMONIA CARBONATE.—Lump £37 per ton; powdered, £39 per ton, packed in 5 cwt. casks, delivered or f.o.b. U.K. ports.

AMMONIA, LIQUID, 80°.—Unchanged at about 2½d. to 3d. per lb., delivered according to quantity.

AMMONIA MURIATE.—Grey galvanisers' crystals of British manufacture quoted £23 10s. to £25 10s. per ton, ex station. Continental on offer at about £21 10s. per ton, c.i.f. U.K. ports. Fine white crystals of continental manufacture quoted £18 2s. 6d. per ton, c.i.f. U.K. port.

ARSENIC WHITE POWDERED.—Unchanged at about £15 15s. per ton, ex wharf, early delivery. Spot material on offer at £16 10s. per ton, ex store.

BARIUM CARBONATE, 98/100%.—White powdered quality quoted £6 15s. per ton, c.i.f. U.K. ports.

BARIUM CHLORIDE.—Spot material quoted £10 per ton, ex store. On offer from the continent at about £9 per ton, c.i.f. U.K. ports.

BLEACHING POWDER.—English material, unchanged at £9 10s. per ton, ex station; contracts, 20s. per ton less. Continental now quoted £7 15s. per ton, c.i.f. U.K. port.

BARYTES.—English material unchanged at £5 5s. per ton, ex works. Continental quoted £5 per ton, c.i.f. U.K. ports.

BORAX.—Granulated, £22 10s. per ton; crystals, £23 per ton; powdered, £24 per ton; carriage paid U.K. stations.

CALCIUM CHLORIDE.—English manufacturer's price unchanged at £5 12s. 6d. to £5 17s. 6d. per ton, ex station. Continental quoted £3 15s. per ton, c.i.f. U.K. port.

COPPERAS, GREEN.—Quoted £3 10s. per ton, f.o.f. works. Moderate enquiry for export and price about £4 2s. 6d. per ton, f.o.b. U.K. port.

COPPER, SULPHATE, 99/100%.—Continental material on offer at about £22 10s. per ton, ex wharf. English material for export quoted £23 5s. per ton, f.o.b. U.K. ports.

FORMALDEHYDE, 40%.—Spot material quoted £40 per ton, ex store. Quoted £39 per ton, c.i.f. U.K. ports, early shipment.

GLAUBER SALTS.—English material unchanged at £4 per ton, ex store or station. Continental quoted £3 per ton, c.i.f. U.K. ports.

LEAD, RED.—Imported material on offer at £39 per ton, ex store.

LEAD, WHITE.—Now quoted £39 10s. per ton, ex store.

LEAD ACETATE.—White crystals quoted £45 per ton, c.i.f. U.K. ports, prompt shipment. Brown about £40 10s. per ton, c.i.f. U.K. ports.

MAGNESITE, GROUND CALCINED.—Quoted £8 10s. per ton, ex store, in moderate demand.

POTASH, CAUSTIC 88/92%.—Syndicate prices vary from £25 10s. to £28 15s. per ton, c.i.f. U.K. ports according to quantity and destination. Spot material available at about £29 per ton.

POTASSIUM BICHROMATE.—Unchanged at 4½d. per lb., delivered.

POTASSIUM CARBONATE, 96/98%.—Quoted £25 5s. per ton, ex wharf, early delivery. Spot material on offer at £26 10s. per ton, ex store; 90/94% quality quoted £22 5s. per ton, c.i.f. U.K. ports.

POTASSIUM CHLORATE, 98/100%.—Powdered on offer at £26 15s. per ton, c.i.f. U.K. ports. Crystals, £28 per ton, c.i.f. U.K. ports.

POTASSIUM NITRATE (SALTPETRE).—Unchanged at about £22 5s. per ton, c.i.f. U.K. ports, spot material available at £24 10s. per ton, ex store.

POTASSIUM PERMANGANATE, B.P. CRYSTALS.—Quoted 7½d. per lb., ex store, spot delivery. To come forward 7d. per lb., ex wharf.

POTASSIUM PRUSSIAN, YELLOW.—Spot material unchanged at about 7d. per lb., ex wharf. Quoted 6½d. per lb., c.i.f. U.K. ports to come forward.

SODA CAUSTIC, 76/77%.—£17 10s. per ton; 70/72%, £16 2s. 6d. per ton; broken, 60%, £16 12s. 6d. per lb., ex wharf, 98/99%, £20 17s. 6d. per ton. All carriage paid U.K. stations, spot delivery. Contracts 20s. per ton less.

SODIUM ACETATE.—English material quoted £22 per ton, ex station. Continental on offer at about £20 10s. per ton, ex store, or to come forward, £19 15s. per ton, c.i.f. U.K. ports.

SODIUM BICARBONATE.—Refined recrystallised quality, £10 10s. per ton, ex quay or station. M.W. quality, 30s. per ton less.

SODIUM BICHROMATE.—English price unchanged at 3½d. per lb., delivered.

SODIUM CARBONATE (SODA CRYSTALS).—£5 to £5 5s. per ton, ex quay or station. Powdered or pea quality, £1 7s. 6d. per ton more, (Alkali 58%) £8 12s. 3d. per ton, ex quay or station.

SODIUM HYPOSULPHITE OF SODA.—Large crystals of English manufacture quoted £9 per ton, ex station, minimum 4-ton lots. Pea crystals, £14 10s. per ton, ex station. Continental commercial on offer at about £7 15s. per ton, c.i.f. U.K. ports.

SODIUM NITRATE.—Quoted £13 per ton, ex store; 96/98% refined quality, 7s. 6d. per ton extra.

SODIUM NITRITE, 100%.—Quoted £24 per ton, ex store. Offered from the continent at about £22 5s. per ton, c.i.f. U.K. ports.

SODIUM PRUSSIAN, YELLOW.—In little demand. Spot material now on offer at 4d. per lb., ex store. Offered for early delivery from the continent at 3½d. per lb., ex wharf.

SODIUM SULPHATE, SALTCAKE.—Price for home consumption, £3 10s. per ton, ex works. Good inquiry for export and higher prices obtainable.

SODIUM SULPHIDE, 60/62%.—Solid, £13 5s. per ton; broken, £14 5s. per ton; flake, £15 5s. per ton; crystals, 31/34%, £8 12s. 6d. per ton. All delivered buyers' works U.K., minimum 5-ton lots, with slight reduction for contracts; 60/62%, solid quality offered from the continent at about £9 15s. per ton, c.i.f. U.K. ports; broken, 15s. per ton more; crystals, 30/32%, £7 per ton, c.i.f. U.K. port.

SULPHUR.—Flowers, £11 10s. per ton; roll, £10 5s. per ton; rock, £10 5s. per ton; floristella, £9 15s. per ton; ground American, £9 per ton; ex store, spot delivery; prices nominal.

ZINC CHLORIDE.—British material, 96/98%, quoted £23 15s. per ton, f.o.b. U.K. ports; 98/100%, solid, on offer from the continent at about £21 15s. per ton, c.i.f. U.K. ports; powdered, 20s. per ton extra.

SULPHATE.—Continental make on offer at about £11 per ton, ex wharf.

NOTE.—The above prices are for bulk business and are not to be taken as applicable to small parcels.

Dirty Steel

THE Bureau of Mines, Department of Commerce, is conducting an investigation with the object of finding the causes for, and methods of eliminating, mechanical inclusions of foreign substances in steels. This is a new problem and is one phase of the general problem of the "Physical Chemistry of Steel Making" which the Bureau proposes to study.

Company News

NEW TAMARUGAL NITRATE CO.—An extraordinary meeting has been called to consider the offer of £1 for the purchase of the London Nitrate Co. in consideration of the issue of shares for the nominal value of £450,000.

BRADFORD DYERS ASSOCIATION, LTD.—The directors have declared an interim dividend for the year to December 31 next on the ordinary shares at the rate of 1s. per share, subject to income tax. The dividend warrants will be posted on September 1.

J. AND J. CUNNINGHAM.—The report for the year to June 30 last shows that after providing £11,599 for renewals and depreciation, and making provision for bad and doubtful debts, there remains £14,474, plus balance brought forward of £24,485. The directors recommend a dividend of 5 per cent., less tax, on ordinary shares, carrying £21,959 forward. The meeting will be held at Leith, on August 16, at noon.

B. LAPORTE, LTD.—The report for the year ended June 30 last states that the net profit was £16,841, and £9,566 was brought forward. A dividend of 9 per cent. is proposed on the ordinary shares, carrying forward £9,815. The sum of £900 has been transferred from the share premium account to the reserve fund, in addition to £895 from the profit and loss account, and also £1,000 arising out of the formation of a subsidiary company, Genoxide, Ltd. The total transfer of £2,795 increases the reserve fund to £20,722. Mr. R. Stewart and Mr. J. Sutherland (directors), and the auditors, Rawlinson and Mitchell, offer themselves for re-election. The annual general meeting was held at 11, George Street West, Luton, on Friday.

Chemical Trade Inquiries

The following inquiries, abstracted from the "Board of Trade Journal," have been received at the Department of Overseas Trade (Development and Intelligence), 35, Old Queen Street, London, S.W.1. British firms may obtain the names and addresses of the inquirers by applying to the Department (quoting the reference number and country), except where otherwise stated.

CEMENT.—A firm of manufacturers' representatives established in Colombo are prepared to accept British agencies for the Island of Ceylon. (Reference No. 186.)

PALM AND COCONUT OILS.—A firm of commission agents established in Danzig desires to obtain the representation of British exporters and manufacturers. (Reference No. 191.)

CAUSTIC POTASH.—A firm of wholesalers and agents resident in Stockholm desire to secure the representation of a British exporter. (Reference No. 205.)

OLEUM.—The Military Powder Factory at Bakirkeny, Constantinople, is calling for tenders for the supply and delivery of 50,000 kilos of oleum. Tenders in sealed envelopes and accompanied by a provisional deposit of 7½ per cent. will be received up to 3 p.m. on September 15, 1926. Local representation is essential. The Department of Overseas Trade will supply British firms not already represented in Turkey with the names of agents who may be willing to act for them. A copy of the general conditions of tender (in French) is available for inspection at the offices of the Department (Room 52). A further copy is available for loan, in order of application, to those firms in the provinces who are unable to arrange for inspection in London. (Reference B. 2759.)

Vacant Appointments

APPLICATIONS are invited for the following appointments:—
Chemist and metallurgist to the Egyptian Government Assay Office in Cairo. Experience in bullion assaying. Contract, two years, with salary from £480 to £600 according to qualifications, etc. A. G. Innes, c/o Chief Inspecting Engineer, Egyptian Government, 41, Tothill Street, Westminster, London, S.W.1. August 17.—
Public analyst for the borough of Northampton. Town Clerk, Guildhall, Northampton. August 16.—
Senior metallurgist to the British Cast Iron Research Association. Not less than £800. The Director, 75, New Street, Birmingham. August 27.—
Lecture-ship in Physical Chemistry in University College, Dundee. The Secretary and Registrar. August 16.

New Chemical Trade Marks

Applications for Registration

This list has been specially compiled for us by Mr. H. T. P. Gee, Patent and Trade Mark Agent, Staple House, 51 and 52, Chancery Lane, London, W.C.2, from whom further information may be obtained, and to whom we have arranged to refer any inquiries relating to Patents, Trade Marks and Designs.

Opposition to the registration of the following Trade Marks can be lodged up to September 11, 1926.

"DEOXIDINE."

463,643. For chemical solutions for the prevention of rust on metal surfaces. Class 1. American Chemical Paint Co., (a corporation organised under the laws of the State of Delaware, U.S.A.), corner of Broad and Chestnuts Streets, Philadelphia, State of Pennsylvania, U.S.A.; manufacturers. October 27, 1925. (To be Associated. Sect. 24.)



470,561. For paints and varnishes, with the exception of red oxide of iron. Class 1. Archibald H. Hamilton and Coe Ltd., Possilpark Paint and Varnish Works, 160, Bardowil Street, Possilpark, Glasgow; manufacturers. June 12, 1926, (To be Associated. Sect. 24.)

"KENGLOSSA."

471,077. For chemical substances used in manufactures, photography or philosophical research and anti-corrosives. Class 1. John H. Fuller & Co., Ltd., 58, Minster Street, Reading, Berkshire; colour grinders, varnish and enamel manufacturers. July 1, 1926. (To be Associated. Sect. 24.)



470,818. For household dyes (Mineral). Class 1. Shand Brothers, Ltd., 20, Renfrew Street, Glasgow; chemical and colour manufacturers. June 23, 1926. Registration of this trade mark shall give no right to the exclusive use of the word "Dainty."

"DORMALGIN."

471,085. For chemical substances prepared for use in medicine and pharmacy. Class 3. J. D. Riedel Aktiengesellschaft (a joint stock company duly organised and registered under the laws of the Republic of Germany), 1 to 32, Riedelstrasse, Berlin-Britz, Prussia, Germany; chemical manufacturers. July 1, 1926.

"NEO-AVENYL."

471,499. For chemical substances prepared for use in medicine and pharmacy. Class 3. The Wellcome Foundation Ltd., 67, Holborn Viaduct, London, E.C.1; manufacturing chemists. July 15, 1926. (To be Associated. Sect. 24.)

New Australian Iron Works

AN agreement between Hoskins, Ltd., and the New South Wales Government in relation to the Port Kembla-Moss Vale railway and the Port Kembla iron works has been completed, states the *Industrial Australian and Mining Standard*. It provides for the erection of iron and steel works by Hoskins, Ltd., and of the opening by the firm of quarries near Moss Vale. The railway and the works are to be completed as soon as possible. Hoskins, Ltd., has placed a deposit of £100,000 as a guarantee of good faith on its part. It is provided that the works shall be finished not later than the railway. The eventual expenditure of £2,000,000 in its part of the enterprise is contemplated by the firm. At first the work is to be confined to the manufacture of pig iron, of which it is estimated 3,000 tons a week will be manufactured, giving employment to from 400 to 500 men. The plans provide for the eventual employment of 3,000 men. A most important clause in the agreement is one which provides that during the first year the railway is in operation it is to carry 100,000 tons of iron ore from the Marulan quarries.

1927

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Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for any errors that may occur.

County Court Judgments

[NOTE.—The publication of extracts from the "Registry of County Court Judgments" does not imply inability to pay on the part of the persons named. Many of the judgments may have been settled between the parties or paid. Registered judgments are not necessarily for debts. They may be for damages or otherwise, and the result of bona-fide contested actions. But the Registry makes no distinction of the cases. Judgments are not returned to the Registry if satisfied in the Court books within twenty-one days. When a debtor has made arrangements with his creditors we do not report subsequent County Court judgments against him.]

FISHER, John Adolphus, 40, Latimer Road, East Ham, analytical chemist. (C.C., 14/8/26.) £16 18s. 6d. July 12.

KATHIJAX, LTD., 4, Mayall Road, Camberwell, chemists' sundriesmen. (C.C., 14/8/26.) £18 13s. 4d. July 8.

Bill of Sale

BUCKLEY, James Francis, 166, Queens Road, Buckhurst Hill, manufacturing chemist. (B.S., 14/8/26.) Filed August 9. £200.

Mortgages and Charges

[NOTE.—The Companies Consolidation Act of 1908 provides that every Mortgage or Charge, as described therein, shall be registered within 21 days after its creation, otherwise it shall be void against the liquidator and any creditor. The Act also provides that every Company shall, in making its Annual Summary, specify the total amount of debts due from the Company in respect of all Mortgages or Charges. The following Mortgages and Charges have been so registered. In each case the total debt, as specified in the last available Annual Summary, is also given—marked with an *—followed by the date of the Summary, but such total may have been reduced.]

SANOPEL, LTD., Lower Broughton, soap manufacturers. (M., 14/8/26.) Registered July 27. £1,500 mortgage, to Eleanor Graham, 89, Stretford Road, Urmston, spinster; charged on land and soap works at Cobden Street, Broughton. *£2,000. February 19, 1925.

TECHNO-CHEMICAL LABORATORIES, LTD., London, S.W. (M., 14/8/26.) Registered July 10, Land charge, dated June 30, 1926, securing £1,400, to Helen M. Wilson, The Avenue, Sydenham Park Road, Sydenham, widow; charged on premises at Fairlawn, Clarence Road, Wandsworth Common. *£41,720. July 15, 1926.

UNITED PAINT CO., LTD., London, E.C. (M., 14/8/26.) Registered July 26, £3,000 debentures (filed under sec. 93 (3) of the Companies (Consolidation) Act, 1908), present issue £1,500; general charge. *Nil. December 31, 1925.

WRIGHT, HINCHLIFFE AND CO. (HOLMFIRTH), LTD., dyers. (M., 14/8/26.) Registered July 23, £7,200 debenture, to W. Hardy, Maybank, Holmfirth, retired dyer; charged on Prickleden Mill, Upperthong, etc., also general charge.

Satisfactions

CLARK, NETTLESHIP AND BAILEY, LTD., Leicester, medicine manufacturers, etc. (M.S., 14/8/26.) Satisfaction registered July 29, £5,000, registered March 12, 1920.

INTERNATIONAL CHEMICAL CO., LTD. (late INTERNATIONAL CHEMICAL LABORATORIES, LTD.), London, W. (M.S., 14/8/26.) Satisfaction registered July 28, £10,000, part of amount registered April 27, 1926.

London Gazette, &c.

Application for Discharge

CHAMBERS, Joseph Faraday, The Laboratory, Arnold, Nottingham, trading as J. F. CHAMBERS AND CO., manufacturing chemist. (A.F.D., 14/8/26.) Hearing October 21, 12.30 p.m., County Court House, St. Peter's Gate, Nottingham.

New Companies Registered

BORDER OIL CO., LTD.—Private co. Registered August 5. Nom. cap., £5,000 in £1 shares (2,500 7½ per cent. cumulative preference and 2,500 ordinary). Wholesale and retail oil merchants, etc. Solicitors:—Halton and Soal, 38, Lowther Street, Carlisle.

FINDLAY (CHEMISTS), LTD.—Private co. Registered August 5. Nom. cap., £1,000 in £1 shares. Wholesale and retail chemists. Permanent directors:—E. W. Cook, 14, Beaumont Road, Plymouth, and Mrs. D. E. Cook, 14, Beaumont Road, Plymouth.

H. C. HIRST, LTD., 215, Victoria Park Road, London, E.9. —Private co. Registered August 5. Nom. cap., £100 in £1 shares. Manufacturers of and dealers in chemicals.

ROBINS AND CO. (CHEMISTS), LTD.—Private company. Registered August 9. Nom. cap. £100 in £1 shares. Consultant and analytical chemists, etc. Registered office: 3, The Broadway, Ludgate Hill, E.C.4.

GORDON SLATER, LTD.—Private co. Registered August 5. Nom. cap., £6,000 in £1 shares. Manufacturers, dealers in oils, colours, dyes, chemicals, etc. Permanent governing director: G. Slater, 57, Victoria Road, Whalley Range, Manchester.

WASTE RECLAMATION, LTD.—Private co. Registered August 4. Nom. cap., £25,000 in 1s. shares (300,000 founders and 200,000 subscription). To acquire any invention or processes relating to the treatment of sewage, sludge, or waste products, and to acquire from E. D. Hopcroft certain processes for the treatment of sewage, etc. Directors:—E. J. Burt, 15, Ashley Place, S.W.1; E. D. Hopcroft, L. S. Levy, W. Doig, J. D. Paton, and A. Wood.

Tariff Changes

ITALY.—Under the provisions of the Italian Customs Tariff the essential oils, synthetic perfumes, alkaloids, and alkaloid salts falling under Tariff Nos. 658A (5), 658B, 661 and 767 are dutiable at the rate of 15 per cent. of their official valuations, these valuations being fixed periodically, in gold lire by the Minister of Finance. Revised valuations have been prescribed by a Decree of May 20. The new valuations are in most cases lower than those previously in force and include reductions on essential oil of geranium, synthetic essence of mimosa, synthetic essence of mignonette and carvol, and increases on essential oil of cardamom, essential oil of roses, agaricine (active principle), eserine, salts of eserine, hydrastine and its salts and pelletterine tannate are announced.

PANAMA.—A Decree (No. 36 of May 25) requires manufacturers and importers of alcoholic liquors, wines and beer in Panama to submit three samples of each beverage which they make or import to the Administrator-General of the Liquor Tax for chemical analysis.

POLAND.—The Polish Consul-General in London has been instructed to legalise certificates of origin, issued by the London Chamber of Commerce, in respect of goods which are exported from the United Kingdom to Poland, or which have originated in any British Dominion, Colony, Protectorate, Possession or Mandated Territory which has adhered to the Anglo-Polish Commercial Treaty, in cases where there exists at present no Polish Consular Officer, authorised to legalise certificates of origin, in the particular Dominion, Colony, etc., in which the goods originated.

SWEDEN.—In virtue of a Royal Decree dated June 16, amendments affecting artificial plastic materials, carbides, superphosphates, thiocarbamide, etc., have been introduced in the Swedish Customs Tariff.

The Oil Problem and Peace

At the Institute of Politics at Williamstown, Mass., the possibility of war resulting from competition amongst the nations to secure oilfields was among the matters referred to. Dr. R. T. Haslam, Professor of Chemical Engineering at the Massachusetts Institute of Technology, told the assembled delegates from various countries that the nations of the world were no longer jealously competing for oilfields, because sufficient oil could be taken from their coal supplies to ensure an independent supply of fuel for fleet operations. Supporting Professor Haslam, Sir James Irvine, Principal of the University of St. Andrews, declared that England had made herself independent of foreign oilfields for war purposes by making synthetic oil from low-grade shales by a highly economical process. Mr. Henry Doherty, the well-known American oil expert, denied the possibility of extracting oil from coal in commercial quantities, and asserted that there was no substitute for petroleum.

